May 29, 1939

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Internationally known specialists in mill equipment designed for efficient and economical operation. Wherever possible, Wean equipment is built in the country where it is to be installed.

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S IN SHEET, STRIP AND TIN MILL EQUIPMENT

for **LARGE**

GEARS
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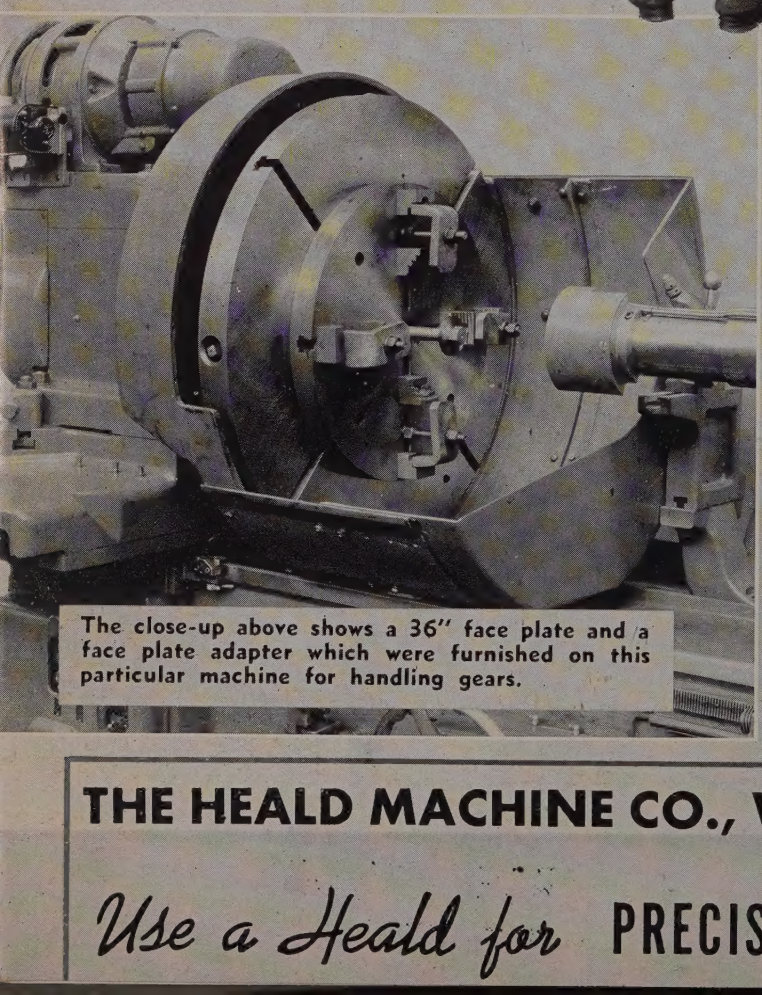

The close-up above shows a 36" face plate and a face plate adapter which were furnished on this particular machine for handling gears.

Large gears, bearing rac
similar work requiring swi
up to 36" are readily ha
Heavy-Duty Heald No.
Grinding Machine. This ma
extended base 18" long
standard No. 74 and is e
a special oversize workhe
for heavy-duty operation.

In addition to a swing cap
within the water guard, th
can be swiveled up to 30°
taper holes. A hand whe
cross-slide under the wo
hand wheel table feed are a
which permit face grinding
hydraulically operated w
swings upward allowing
loading from overhead wi

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Use a Heald for **PRECISION · PRODUCTION**

MAYARI R

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thlehem's low-alloy, high-strength steel opens way to important advantages in design and use

R fills a broad gap between low-cost struc- nd the higher-priced alloy steels.

e workability and weldability of structural shed-job price close to that of structural steel.

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a combination of desirable qualities that ortant economies and worth-while improve- great many applications.

yari R—chemical composition

.....	0.12 max.
se.....	0.50–1.00
us.....	0.08–0.12
.....	0.05 max.
.....	0.05–0.50
.....	0.25–0.75
m.....	0.20–1.00
.....	0.50–0.70

ayari R—physical properties

tensile strength	70,000 p.s.i. min.
nt.....	50,000 p.s.i. min.
on, in 8 ins.....	$\frac{1,500,000}{\text{T.S.}}$ per cent min.
on, 2 ins.....	22 per cent min.
act, average....	75 ft. lbs.
ce limit.....	50,000 p.s.i.
ce ratio.....	0.70

Fully pre-proved—entirely practical

During a long and comprehensive investigation and development program Mayari R was subjected to tests that included fabrication, working, machining, welding, and other features. It was used in routine shop practice by regular workmen in building freight, passenger and mine cars; ships; barges; tanks; towers; hoppers; roofs and other structures.

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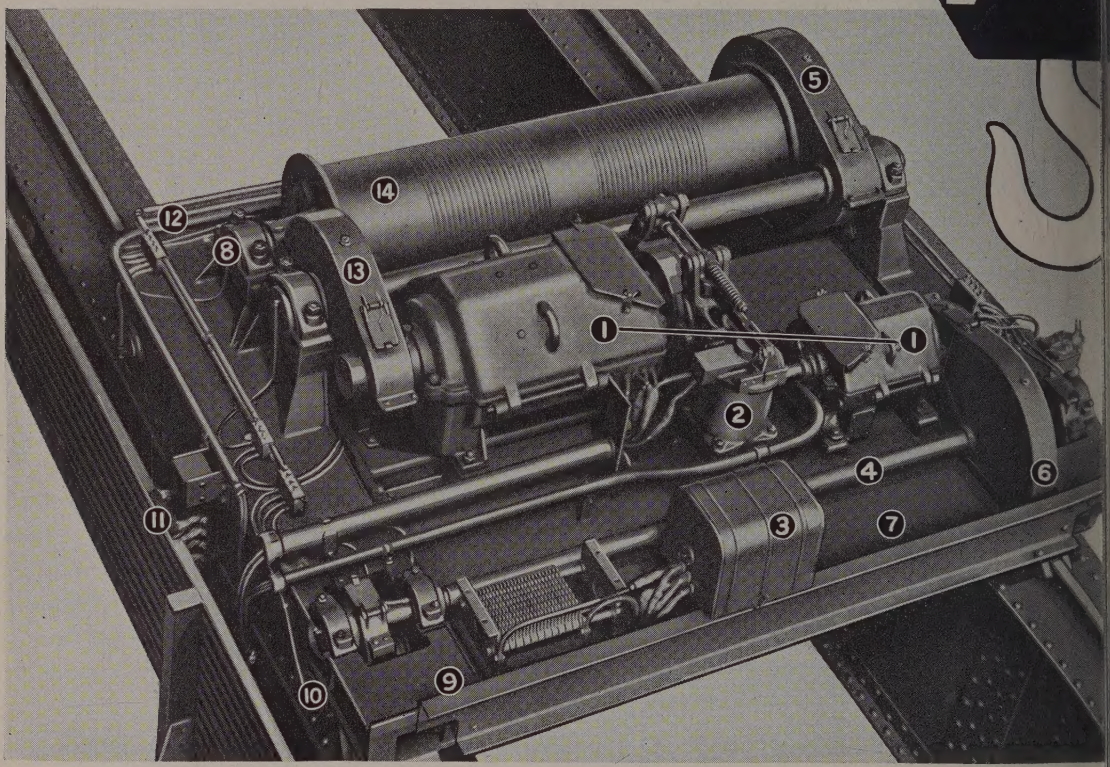

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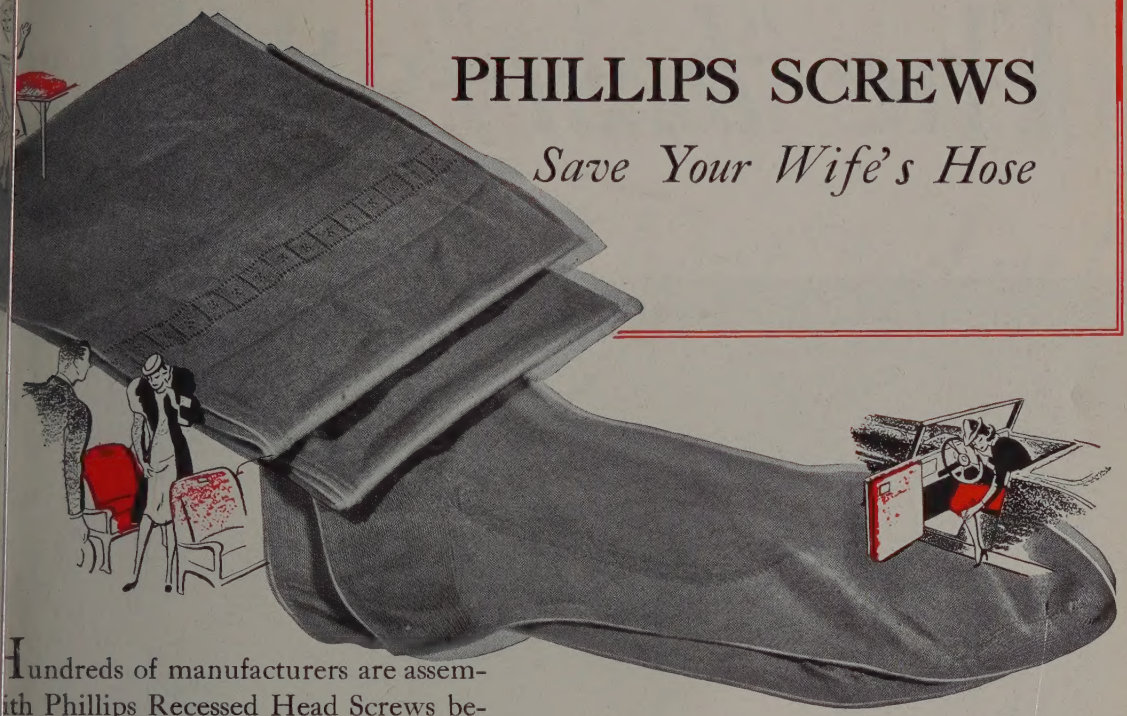
PHILLIPS SCREWS

Save Your Wife's Hose



undreds of manufacturers are assem-
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precision fit of Phillips Driver and
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vers used more often—
danger of slipping driver.
oles, no crooked screws,
o file. Manufacturers of
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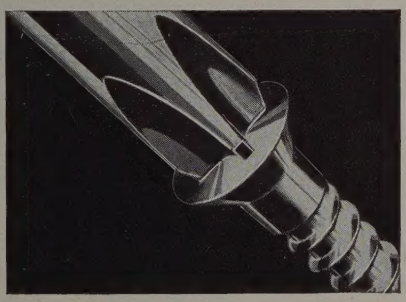

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ew Co., New Bedford, Mass.

Corbin Screw Corporation, New Britain, Conn.
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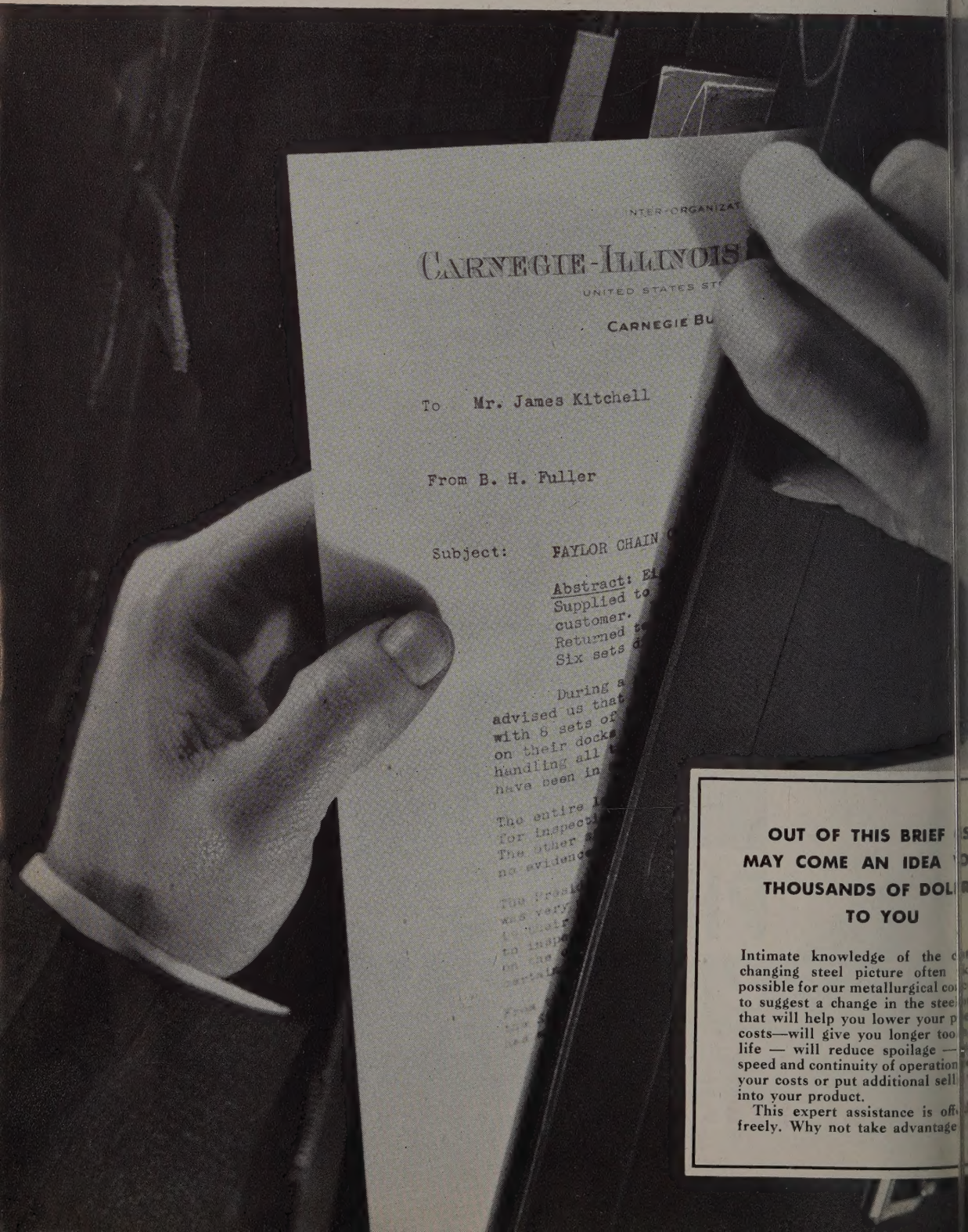

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Intimate knowledge of the c changing steel picture often possible for our metallurgical co to suggest a change in the stee that will help you lower your p costs—will give you longer too life — will reduce spoilage — speed and continuity of operation your costs or put additional sell into your product.

This expert assistance is off freely. Why not take advantage

uld buy last year

ay be "second-best" today!

NO steel user, however well satisfied with the good results he has had in the past, can afford to stand pat on his steel specifications without making sure that Progress has not passed him by.

Developments in steel are today so rapid — the range of properties that new steels offer is so constantly being extended — that the whole economics of your steel buying and steel fabrication can change over-night.

In our files are case histories that would startle you.

Here are stories of thousands of dollars saved merely through a slight change in steel specification — instance after instance where the adoption of a more recently developed U·S·S Carilloy Alloy steel not only did the job equally well or better, but showed important savings over the "perfectly satisfactory" steel used before.

The significant thing about these savings is this—most of them were effected in thoroughly modern plants where careful attention has always been given to the selection of the steel used.

These experiences merely emphasize the fact that with thousands of special steels available and new ones being constantly developed, it is easy to overlook important factors in steel selection that might readily change a loss operation into a profitable one.

That is why the expert assistance of our metallurgical contact men is placed at your command. Here are specialists in made-to-measure steels who in your own plant will gladly match their time against yours to solve any steel problem you face. Their constant contact with every recent development in steel, supported by practical experience in hundreds of applications, can be of unquestioned help in keeping you always thoroughly abreast of the times as far as steel is concerned.

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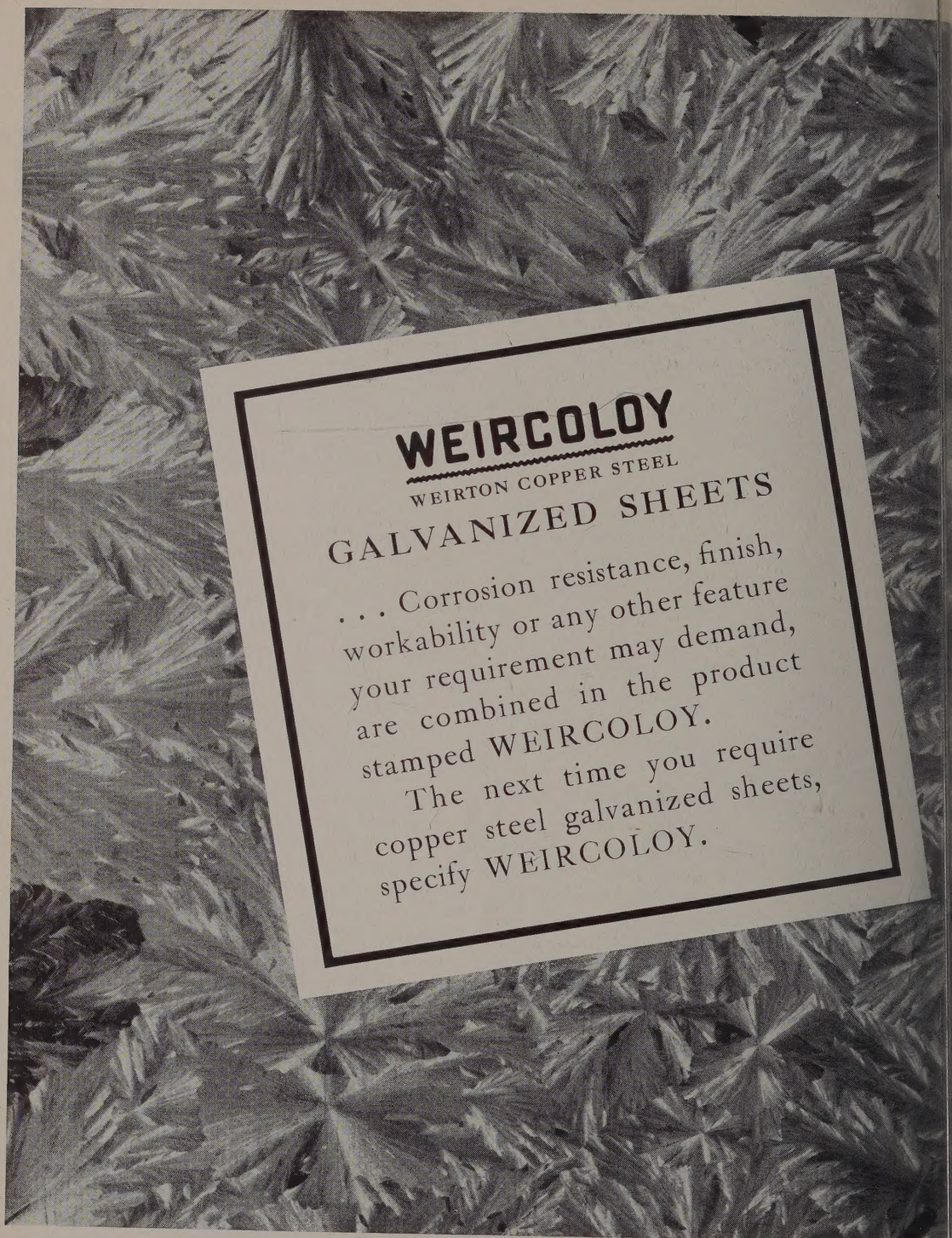
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EADER Comments

Readers are invited to comment upon articles, editorials, reports, prices or other editorial material appearing in STEEL. The editors cannot publish unsigned communications, but at their discretion may permit a writer to use a pseudonym when a bona fide reason exists for withholding his identity. Letters should be brief—preferably not exceeding 250 words.

ng With Steel?

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impatient.
nan can cut prices. It must be approved by the management. Operators have produced wonderful savings, only to see their efforts ruined by a poor sales policy. The steel code under General Johnson, later proved illegal, put the industry on its feet, proving that if the industry was told to stand firm, it could be done.

A way must be developed to work to a code of some sort that would be legal. About fifteen years ago an effort was made by the department of commerce to educate industry to establish a code of ethics, that would not conflict with the department of justice.

This might be worth looking into, instead of pursuing a policy of the survival of the fittest.

Small concerns usually come through, so that policy is expensive and does not produce results.

Much credit is due operating departments for reducing costs. In the future, further improving must come from the commercial side of the business.

OBSERVER

Philadelphia

Patent Law Built Business

To the Editor:

That the American revolution was not political, as commonly supposed, but a struggle of economic character for the new colonies' right to their place in the sun to make and sell their own developments, is the conclusion of H. A. Toulmin Jr. in his forthcoming book, *Patents and the Public Interest.* He bases this on England's fear that the colonies would develop manufacturing competition with her home industries and her effort to maintain the colonies as sources of raw material supplies only. He says:

"The first step taken by the government of the United States was to promote and protect American manufacturing by establishing a system of patent law. Thomas Jefferson was the first commissioner of patents, as well as an inventor and patent lawyer in his own right. It is largely due to his democratic purpose that the patent laws that we have today are in the shape that we have them. He knew that the main protection for the little man and the small manufacturer against the encroachments of the rich and powerful would be the patent law of the United States. He was determined that no matter how impoverished an inventor might be, he would have a reasonable opportunity of protecting his invention and thereby contributing to the national welfare, as well as to his own personal prosperity.

"Many of the greatest industries in this country have come from the humblest beginnings out of the minds of inventors of modest means. For instance, electric motors were the creation of Davenport, an impoverished blacksmith. Goodyear, inventor of vulcanized rubber, struggled along with his poverty. Alexander Graham Bell, inventor of the telephone, was a young doctor who taught deaf mutes for a living. Morse, inventor of the telegraph, was a portrait painter. Invention is no respecter of the individual: Abraham Lincoln was inventor of a water camel, a peculiar type of river boat that was able to get over sand bars even though heavily loaded. Mark Twain was inventor of our standard scrapbook. Statesmen, artists, professional men, the laboring men, women, ministers of the gospel, scientists and government officials have all been inventors."

WILLIAM P. ELLIS

Vice president
Jay H. Maish Co.,
Marion, O.

BETTER PROPELLERS for Britain's planes

British aeroplane manufacturers called for bigger and stronger propellers . . . extremely difficult to forge. An American manufacturer, Erie Foundry Company, Erie, Pennsylvania, met the demand with the world's largest steam hammer . . . 27 feet from floor line to cylinder top . . . 12 feet 9½ inches into the ground. The severely stressed piston rod—heart of the hammer—is Vanadium Steel.

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STEEL
ESTABLISHED 1882

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e Editor
s the News

STEEL markets have a slightly better king advanced 2.5 points (p. 23) to 48 per c, first increase in 12 weeks. While this e recent downward trend results largely backlogs of sheets and strip booked at ons, the rise in some districts (p. 67) is rtly to a general improvement in busi- nger scrap market accompanies better ew base prices on certain products re- ested; meanwhile, warehouses have re- ons on principal items. . . . Automobile ntinue preparations for new models but e maintaining production of current ver, output last week (p. 30) fell sharply t level for the year to date, the result ant strike which tied up assemblies of .

♦ ♦ ♦

private capital is at the root of the ness problems and results chiefly from and unsound economic policies of the national administration (p. 18), according to Tom M. Girdler, chairman, Republic Steel Corp., and retiring president, American Iron and Steel institute. Speaking orty-eighth general meeting of the in- Girdler placed a share of the blame for arnings on failure of the industry to with soaring costs. "The fault lies ers. They do not honestly object to fair entirely with the steel industry itself," Ernest T. Weir, chairman, National Steel was named to succeed Mr. Girdler as he institute.

♦ ♦ ♦

sheet mills have not reduced employ- t Chapple, assistant to the president, lling Mill Co., told the National Asso- ciation of Purchasing Agents (p. 27) at its annual convention. "There are 1.57 jobs today per ton of production, compared with 1.34 in the handmill days," he dustry is recognizing the Clayton and s as defense weapons against strikes, as evidenced by a $7,500,000 damage suit (p. 23) filed by Republic Steel Corp. against the CIO. . . . Large orders for military aircraft (p. 27) were placed last week by the army air corps. Additional awards are expected after start of the new fiscal year July 1.

♦ ♦ ♦

Heavy Work Now Ground

Surface grinding has definitely arrived as a recognized method of heavy machining (p. 40), chiefly because tool builders have had imagination and courage to break with traditions which had previously bound the process. Contributing factors are improved types of abrasive wheels, and grinding machines incorporating superior design features. . . . Anticipating a continuously expanding use for cemented carbides, the country's largest producer has completed a new manufacturing plant in Detroit (p. 42) which consolidates present facilities in three cities and has a capacity ten times present demand. Production control is an outstanding feature. . . . A new type of light-weight ingot mold insulation, consisting of granulated cork encased in clay and thrown on the ingot top after pouring (p. 46) reduces piping and permits repouring. Carbon pick-up is eliminated.

♦ ♦ ♦

Welding in Pipe Lines

With development of standards for welding fittings, pipe lines now can be laid out with definite assurance that the finished job will meet specifications and that welding can be performed speedily and reliably (p. 48). . . . Materials handling equipment, including live and gravity roller conveyors, elevators and lowering devices, is aiding oil refiners (p. 50) in their operations of cleaning, repainting and refilling returned drums. . . . Careful selection of steel and close control of heat treatment must be exercised in manufacture of oil well pumps and sucker rods (p. 54). A nickel-molybdenum type of steel shows good service results. . . . Automobile engineers, opening their World congress in New York (p. 64), see progress in the next decade far outstripping that of the past decade.

E C Kreutzberg

Where Proper Timing Counts

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el Institute Studies Further Product

Standardization, Other Problems

t that the steel indus- "vital necessity for sounded by T. M. Gird- president, before the general meeting of the on and Steel institute, ria hotel, New York, y. Mr. Girdler, chair- blic Steel Corp., Cleve- mbers what he thought with the steel business and the nation's busi- ral.

o words in his attack l policies, which he re- arily responsible for culties, he was equally n censuring producers policies which he said tting to the industry's l showing. For abstract r's address, see page 18.

r's sessions attracted rs than ever before. At- ghtly exceeded the rec- roximately 1000 made The figure, however, is able with the 2000-total ce at the 1937 session, the regulation restrict- nce to members only ffect.

eir, chairman, National , was elected president Mr. Girdler, who had years. Benjamin F. resident, United States ., and Frank Purnell, Youngstown Sheet &

Tube Co., were named vice presidents, succeeding William A. Irvin, former vice chairman of the United States Steel Corp., and Mr. Weir.

H. L. Hughes, vice president, United States Steel Corp., was re-elected treasurer, and Walter S. Tower, executive secretary.

Sen. Millard E. Tydings, Maryland, speaking at the annual dinner, criticized the "whole reckless program" of the federal administration.

Advances Recovery Program

Particularly he castigated the spending policy, the tax policy, the experimentation and the lack of sympathy with business' problems.

"Obviously the policies of the present administration cannot go on interminably. Indeed, to pursue the course much further is to hasten disaster.

"How then can we turn the flank of this movement, so shot with sophistry? That is a task of those who are in positions of leadership, in and outside of government, a task of getting 120,000,000 men, women and children back on the road to real recovery."

Senator Tydings suggested a partial program to restore confidence and to create new employment for the idle in private business.

His recommendations: First, reorganize the federal government to accomplish not only efficiency but real and general economy. For example, he said many millions can be saved in all departments by dropping press agents, propaganda and other activities which are costly and more political than anything else.

Second, eliminate more than a score of borrowing corporations and agencies and let the treasury borrow as needed for all the federal government.

Third, have a thoroughly honest purge of the welfare rolls, base relief on real need, require localities to bear a definite portion of the burden that local interest may demand elimination of abuses.

Fourth, enact a tax program that raises sufficient revenue to at least approximate the staggering appropriations and recurring deficits of today. This can be done by broadening the income tax base requiring each citizen to carry part of the national tax burden, according to his ability to pay.

Fifth, overhaul the Wagner labor act.

Sixth, revise the social security

✦

gratulations!

Iron and Steel institute's nt, Ernest T. Weir, chair- onal Steel Corp. (left), and dler, chairman of Republic right), who retires after two rk at 16, Mr. Weir has spent the industry, built National tin plate mill into the coun- rgest steel producer. His s shown a profit and paid r 37 consecutive quarters organization in Novem- ber, 1929

act. Eliminate the intended accumulation of reserve. Place it on more of a pay-as-you-go basis.

Seventh, remove expenditure of public funds from one-man domination, where too often political considerations rather than the public welfare dictate where and how it shall be spent—as was the case in building of bridges in Maryland during the last campaign.

Following Senator Tydings' address, Chairman Girdler called on Charles M. Schwab, chairman, Bethlehem Steel Corp. Mr. Schwab gave brief reminiscences of his long career in the steel industry, expressed his faith in the industry's future.

Scheduled speakers at the general session, in addition to Mr. Girdler, were Mr. Fairless and Arthur Roeder, chairman, Colorado Fuel & Iron Corp. Due to illness Mr. Roeder was unable to appear and his paper was read by Mr. Tower.

Further standardization of steel products will be found beneficial, declared Mr. Fairless. In the field of flat-rolled products, particularly, he said, there is room for additional efforts toward simplification.

Standardization Limited

Standardization, he declared, is desirable only insofar as it provides against unnecessary and unprofitable diversification of products, but at the same time allows for useful variety.

"Diversification tends to diminish the tonnage involved in any one item scheduled for production. Needless diversification and the small order walk hand in hand.

"The steel producer is not at all unappreciative of small orders, particularly when conditions are such that they may be combined and consolidated for execution at the mill. A hundred relatively small orders involving only a few standard products need not present a serious problem as to melting, rolling, or processing, but as variety increases, the expense of production mounts rapidly.

"To roll five tons of a certain selected shape costs $8.80 more per ton than to roll a hundred tons. In another case the increase amounts to $12.95, and a third instance to more than $15 per ton.

"The figures applying to one ton, as against one hundred, or fifty, or even five tons, are almost startling, although not entirely unexpected, for the differentials in rolling costs alone often exceed the selling prices. When expense of supplying steel of a special composition is added to the excess in rolling costs, the results are still more unfavorable.

Mr. Fairless cited examples of standardization of steel products and the benefits that have resulted. "It is probably safe to say 90 per cent of the structural steel and plate now produced is manufactured under not more than ten different specifications, and further that approximately 75 per cent of the structural steel is produced under two specifications."

Similar standardization of sheet piling, rails and other products has lowered costs and resulted in increased use.

In a business as widespread as the steel industry, he continued, it is inevitable that the normal and necessary diversity of products will be large. New products will be developed to provide for new requirements.

B. F. Fairless

"With this situation before us it seems appropriate to suggest that the steel industry take stock of what it is producing at the present time and attempt to determine, with the aid of its customers, whether unnecessary items are distracting attention. If a superfluity of grades is found to exist, along with whimsical variations in products, a good housecleaning is in order."

Mr. Fairless referred to the work currently being done by the institute's technical committee. He suggested this committee, or one sponsored by the institute, might take the initial steps toward the ends indicated.

"The ideas and attitude of industry must first be crystallized. A considerable amount of co-operative technical spade work must be done on the home grounds and those of numerous customers. Thereafter the contacts with various trade associations, technical societies, and standardizing bodies such as the American Society for Testing Materials and the American Standard association could be made for the treatment of those features which are of interest to them.

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Welding Advantages

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s permissible; and how to make welds more simultaneously to minimize distortion.

With solutions of these problems, advances in welding were predicted as follows: "(1) Much higher welding speeds; (2) marked reduction in the volume of weld metal required in a joint, with a resultant minimizing of distortion and extent of the stress-affected area; (3) more general use of preheating and controlled cooling, permitting use of higher strength steels; and (4) further development of steels possessing the optimum composition for strength and ready weldability."

Problems in the manufacture and use of steel products were discussed by James E. Lose, vice president, Carnegie-Illinois Steel Corp.

"Proper development of the steel industry rests on the successful solution of the problems with which it is confronted in the manufacture and subsequent use of its products," said Mr. Lose. "Therefore our customers' needs and requirements become our problems."

Mass production methods by customers has brought a demand for steels conforming to rigid specifications in chemistry, size and other physical characteristics. This limits the possibilities for mass production technique in the manufacture of steel.

Mr. Lose discussed problems in making and using individual steel products—tin plate, sheet and strip, bars and semifinished, railroad rails, wheels, axles and cars, wire, structurals and plates, and pipe and tubing.

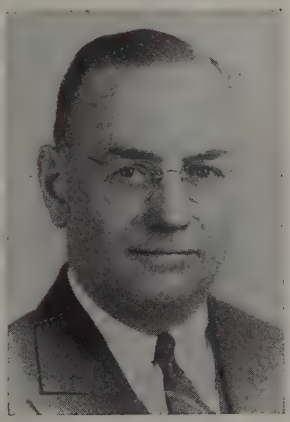
Urges Extensive Program

To improve the situation, he suggested: (1) To advocate to the consuming trade the advantage of better size rolling; (2) to continue a properly co-ordinated research program both along fundamental and technological lines; (3) to promote frank discussion of problems between producers and users; (4) to carry on diligent research in the development of new uses for steel; and (5) to promote the present work of standardizing carbon steels by grades.

How Great Britain's steel industry was reconstructed after price-cutting brought it to the brink of insolvency in 1932, was related by James Henderson, deputy-chairman, Appleby-Frodingham Steel Co. Ltd., London, in discussing the manufacture and use of steel in that country.

Introduction of wide strip mills, Mr. Henderson said, is widening the markets of British steelmakers. One mill is already in operation, another being built. He declared resistance welding is increasing the use of steel in general construction and building work.

Bradley Stoughton, dean of engineering, Lehigh university, Bethlehem, Pa., described "The Training of a Metallurgist." A college's chief function in such training, he said, is to accomplish five major objects: (1) To impart fundamental information; (2) to train the facilities of observation concerning pertinent phenomena; (3) to instill the spirit of inquiry concerning the reasons for such phenomena; (4) to inculcate and discipline orderly and logical habits of thinking; (5) to cultivate facility in expression in both oral and written discourse, so that the products of thought may be effectively communicated.



J. T. Whiting

Mr. Whiting, president of Alan Wood Steel Co., Conshohocken, Pa., was awarded the Steel institute's medal for 1938, in recognition of his paper "Microscopic and Petrographic Studies of Blast Furnace Material," delivered at the forty-seventh general meeting.

Following graduation from the University of Michigan in June, 1909, he joined the metallurgical department of Illinois Steel Co.'s South works, South Chicago, Ill., going from there to the blast furnace department. He worked successively for the By-Product Coke Corp., South Chicago, then under the management of Semet-Solvay Co.; Federal Furnace Co., South Chicago; Whitaker-Glessner Co., Portsmouth, O.; Steel & Tube Co. of America, Mayville, Wis.; and Donner Steel Co., Buffalo.

In September, 1927, he joined the Hamilton Coke & Iron Co., Hamilton, O., as vice president and general manager. In January, 1932, he was elected vice president of the Alan Wood Steel Co., and in February this year he was appointed president of the company, succeeding Clement B. Wood, who resigned as president but continued as chairman of the board.

Warns Steel Industry Must Reform Pr

Policies To Improve Earnings

By T. M. GIRDLER

■ IN CONSIDERING the problems confronting our industry it is important to remember that the state of steel is inseparable from the state of the nation.

The country at large has never really recovered from the collapse of 1929. After ten years the problem of restoring genuine prosperity and finding jobs for the unemployed remains acute and pressing. That is still true despite all of the strange and fantastic nostrums that have been applied to the country's economy, and despite the squandering of billions upon billions of dollars in the effort to "spend our way out of the depression."

Fortunately, the country is rapidly waking up to the fact that the real root of our trouble lies in the idleness of private capital, as represented by the large accumulated savings of millions of people. It is now generally recognized that something is blocking the flow of these savings into the normal channels of enterprise, and that unless the obstacles are removed there can be no genuine uplift of business or of employment.

No Dark Mystery

Recently the reasons for the blockade have been the subject of public inquiry. There is no dark mystery about the facts, and if a realistic answer is wanted by the inquiring body, it is right at hand and in plain view. It is to be found chiefly in the dizzy finance and the unsound economic policies of the present national administration, which have destroyed confidence, created widespread uncertainties and made long-term planning impossible. To all this there has been added over recent months a distracted state of mind which has been called "war hysteria," created out of news dispatches from Europe. During its height this war hysteria was permitted to divert the attention of the public and the government from the pressing problems at home, but these problems are too urgent to be kept out of sight for long, and they are again to the fore, crying for sober consideration and solution.

Some months ago the country was filled with talk of a changed front in Washington. The administration was to start a great program of business co-operation—all aimed at restoring confidence, stimulating industry and trade, and increasing employment. Well, we are still waiting for it to start. According to all reports there was a battle royal among the inner circle of the palace guard, with the extreme leftwingers routing the moderates, and the co-operation program was cancelled.

And now, according to all reports, another kind of program is being devised for industry by these same leftwingers. Having tied the victim hand and foot, knocked him to the ground and thrown a heavy weight on his chest, they accuse him of "sulking" because he is not up and around as usual. It seems they are planning to prescribe a new assortment of stimulants, all taken out of the same old bottle labelled "deficit spending." Apparently they are laboring under the hallucination that the expenditure of a few more billions will accomplish what the spending of 20 billion dollars had failed to do. (They are like some of the people in the steel industry, who never learn anything by experience.)

Not long ago a distinguished United States senator described the present government in Washington as "the most wasteful and autocratic bureaucracy ever inflicted on this or any other country."

That is a strong and sweeping statement, but unfortunately not lacking in elements of truth. We see supporting proof of it in the fact that the federal debt in the last six years has swo than $40,000,000,000, a rent annual expenditu rate of nearly $10,000,0 most $4,000,000,000 in come.

A considerable porti vast sums has been spe to "prime the pump" But the pump is still serted by responsible fully 10,000,000 people employed and 21,000,00 continue as government

Notwithstanding the purposes of the defic there is ample justifica suspicion that a hidden to bring about a redis wealth. What is happ wider distribution of p

In 1938 the (steel) in nearly $100,000,000 in was approximately $15,0 than the industry ear taxes. Of the total, nea cent went to local tax

Taxes Handicap In

When you examine las bill for the industry was only 4 per cent les for 1929, although prod some 50 per cent les earnings before taxes w cent less. The tax total lent to $254 for each w attached to the industry to more than $5 for e finished steel produced.

While the amount of t is bad, the nature of so federal levies as a hand industry is even worse. such tax monstrosities a tal stock tax, the undistri its tax and similar levies these taxes were impose country in the furthera American theories, to u power, not for revenue coercive purposes. They complished no good or u pose. They have helped and perpetuate unemplo

Of all the monkey wren

Abstract of address at the forty-eighth general meeting of the American Iron and Steel institute, New York, May 25. Mr. Girdler retired as president of the institute.

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dustry since 1930 have been only 1.2 per cent on invested capital.

Judging from the record the industry has become allergic to profits. To look at its performance you would think it had anticipated those who want the profit system abolished, and for all practical purposes had established itself as the first great industry devoted to the idea of production for use.

Not all of the blame for poor earnings in the steel industry can be put on the New Deal or the international situation. Part of it rests squarely upon the industry itself. If we do some honest soul-searching we will find that a share of this trouble lies in our own policies and practices. True enough, in recent years demand has been restricted, volumes have been unsatisfactory and the industry has suffered from the general condition of uncertainty and confusion, but none of these nor all of them combined justify prices for steel below the cost of production, or insufficient to yield a fair profit.

The industry has seen its costs mount higher and higher and grow ever more rigid. It has seen the break-even point soar like a rocket to around 50 per cent of capacity, the highest in history. It has seen the attempt by government to make wage rates fixed and inflexible. And what has the industry done to meet these situations? It has brought down prices.

When prices are lowered in keeping with economies of production and to stimulate consumption, that is one thing. The result is of wholesome benefit to the national economy. But when prices are lowered in the face of high costs without stimulating the general use of steel, that is another thing. The result is a step backward for a great industry and a blow to the national economy. As we well know, the major portion of orders received by the steel industry is accompanied by specifications for special requirements, making it impossible for steel ever to become a mass production industry in the same sense as other industries turning out millions of units of a single kind or style of product.

I believe in the lowest possible price for steel consistent with quality and costs. Any industry as basic as steel would be in an utterly indefensible position if prices for its products were exorbitant and its profits excessive.

I regard as equally indefensible the industry's failure to earn a fair profit upon a fair volume of business.

Have Forgotten Stockholders

Steel should increase, and has increased at great cost, the efficiency of its methods and the quality of its products.

Consumers have shared in these benefits and greatly expanded markets have resulted. That is exactly as it should be, but in the scramble for business in the hard years of the recent past, the industry has completely forgotten the existence of the stockholder—the owner of the business, whose savings gave it the breath of life. The industry has sold steel at cost or less than cost and actually passed on some costs of doing business to stockholders.

The fault lies not with buyers. They do not honestly object to fair

(*Please turn to Page* 64)

Metal Trades Group Told New Deal Policies Block "Greatest Prosperity"

■ HOPES for future industrial and national prosperity hinge largely on changes in government administration, it was indicated by addresses made before some 500 metalworking executives and industrial relations experts in Chicago last week. Occasion was the forty-first annual convention of National Metal Trades association at the Palmer House, May 24-25.

George H. Houston, New York, in an address on "Future Demand for Capital Goods in the United States," forecast that in the '40's America would enjoy the greatest prosperity and the greatest demand for capital goods it has ever known—if certain adverse political factors can be corrected.

Julius P. Heil, governor of Wisconsin, speaking at the banquet, May 24, as a fellow industrialist, digressed from his topic of "Partners —Men and Management" long enough to say he had told Wisconsin voters prior to his election: "I am an industrialist. Industrialists are of the greatest benefit to labor and to the farmer today." If more confidence were placed in industrialists, he said, there would now be less men on WPA projects, fewer shovels resting on the street corners of the country.

At one point in his extemporaneous remarks he scored the present administration, stating bluntly that the President, with the assembled brain-power and talent of Washington behind him, should be able to devise a simple formula to balance the nation's budget.

He concluded with the plea, "Don't sit by and let John do it! Rehabilitate America by the route of industry!"

Pays Tribute to Metalworkers

Another high point of the banquet program was an address by Col. Roscoe Turner, nationally-known speed flier. Colonel Turner won applause with the statement he admired Governor Heil for the political upset he had scored in Wisconsin, and stated his hope there were sufficient men left in the country to achieve certain other political upsets.

The flier also paid tribute to the metalworking industry as a chief contributor to the progress made in aviation. In his own case, he said, metallurgical progress had been chiefly responsible for doubling the horsepower of his racing engines without increasing weight. His address, "Speed in Aviation", cited examples of castings being cracked under the strain of six-mile-per-minute speeds. This was corrected by advanced metallurgical practices.

The two-day convention opened with a discussion on "Use and Application of Job Rating." A. W. Kress presented specific cases in which management had used job rating to a definite advantage. E. L. Berry, assistant general manager, Link-Belt Co., Chicago, and Howard Goodman, vice president, Goodman Mfg. Co., Chicago, spoke on the uses and benefits of job rating in their own plants.

Report of the association's committee on merit and employe rating was presented by W. W. Finlay, Wright Aeronautical Corp., Paterson, N. J.; and the use of employe rating was discussed by O. D. Reich, Dexter Folder Co., Pearl River, N. Y., committee's chairman.

Anti-Union "Swing" Cited

"One of the noteworthy trends in recent months has been the 'conservative swing' of public opinion toward stiffer state labor legislation," stated Nelson W. Pickering, association president, in his report. "The increased demand for amendment of the Wagner act is also a favorable indication. This trend, it seems to me, can best be explained as a perfectly normal and sensible reaction to the public's impatience with sit-down strikes, 'wildcat' union organizing activities, and the policies and practices adopted by the labor board.

"The large majority of employes has never been interested in unions. The continual bitter wrangling between the CIO and AFL unions, as well as some of the independents, and the coercive practices adopted so generally by unions toward non-union workers, has been responsible for a growing loss of enthusiasm for organized labor, even by those employes who had been led to believe that unionization was the one and only means of protecting their own interests.

"Labor leaders," Mr. Pickering continued, "are recognizing this 'back-swing' movement and are, therefore, trying to consolidate their position. Politics and the 1940 election seem to be playing a considerable part in the 'sit-tight' attitude which the American Federation of Labor has adopted, and there appears to be no possibility at present of a united labor front being formed by the two or[illegible] ganizations."

He stated emphat[illegible] not believe that it is [illegible] recount here what An[illegible] try, free of clumsy a[illegible] interference by gove[illegible] ganized force, has don[illegible] tion. A survey of cha[illegible] tions in the standard o[illegible] 1800 to 1939, and co[illegible] American industrial p[illegible] that of Europe is suffic[illegible] onstrate what has b[illegible] plished.

"Without a doubt, [illegible] control has been esse[illegible] achievement. Yet such [illegible] self-perpetuating. It is [illegible] something to understan[illegible] guard carefully, and to [illegible] encroachment upon. It [illegible] to exist to the advan[illegible] groups only if it has th[illegible] operative support of th[illegible] lieve in its benefits. F[illegible] the National Metal Tra[illegible] tion has been an impo[illegible] ment in its preservation [illegible] trades industry," Mr. Pi[illegible] cluded.

Those attending the [illegible] May 24, were entertain[illegible] lightened by the demons[illegible] discussion of Dr. Thom[illegible] Westinghouse Electric & [illegible] East Pittsburgh, Pa., on "[illegible] in Electricity." He prese[illegible] ods by which air coul[illegible] pletely rid of dust pa[illegible] lustrated the destruction [illegible] with light rays, and produ[illegible] volt currents, which, as [illegible] strated to the audienc[illegible] ment, actually made his [illegible] on end.

William McCulloch, for[illegible] editor, *The Spectator*, [illegible] Ont., contributed absorbin[illegible] of international affairs.

Middle-Class Squee[illegible]

"We cannot hope to [illegible] political freedom unless [illegible] want to work can look f[illegible] economic independence," [illegible] Samuel B. Pettingill, fo[illegible] gressman from Indiana. "[illegible] the greatest importance b[illegible] looked is that the thrifty [illegible] is being liquidated. Th[illegible] class citizen is in the squ[illegible] constantly more difficult f[illegible] provide for his dependent[illegible] his own old age."

John C. Metcalfe, for[illegible] investigator, Dies commi[illegible] the convention: "It is sho[illegible] argue which of the th[illegible] munism, naziism or fas[illegible] worst. All are anti-Amer[illegible] spite the fact each moves [illegible] pretense of patriotism.

"As long as the Americ[illegible] stand by the principles of t[illegible]

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eport of the twenty-third
eeting of the American
ufacturers' association,
appearing on page 27 of

the May 22 issue of STEEL, announcement was made in the second paragraph of a new statistical service being launched by the association. It was stated that "one of the preliminary charts was on view, the '100 per cent line'—being that for the year 1938, which was a typical 'good year' in the gear business." Reference to the "year 1938" was a typographical error; it should have read "year 1928."

Blast Furnace and Coke Oven Group Meets June 2

■ Eastern States Blast Furnace and Coke Oven association will conduct its annual spring meeting and golf tournament at Pittsburgh Field club, Aspinwall, Pa., June 2.

Program calls for separate meetings of the blast furnace and coke oven groups in the morning; a luncheon; golf in the afternoon; and a dinner at which business will be conducted and new officers elected. F. D. Schreiber, assistant general superintendent, Pittsburgh Coke & Iron Co., Neville Island, Pittsburgh, will address the coke oven session on "Some Ideas on the Recovery of By-products"; the blast furnace session will feature a roundtable discussion.

■ Orders for steel boilers in April were 834, compared with 660 in March and 385 in April last year, the bureau of the census reports. Orders for four months totaled 3650.

Steel's the Thing in This School

entirely steel are library furnishings at Ellsworth high school, Ellsworth, nprises chairs, desks, tables and bookshelves. Said to be one of the most completely steel-equipped schools, Ellsworth also uses the metal om and drawing desks, assembly hall chairs, domestic science cabinets , workbenches and equipment in chemistry and biology rooms. Photo, Bethlehem Steel Co.

Activities of Steel Users, Makers

■ KEYSTONE Steel & Wire Co., Peoria, Ill., has acquired controlling interest in National Lock Co., Rockford, Ill., manufacturer of furniture, refrigerator, cabinet and stove trim hardware and screws and bolts. National Lock has assets of about $5,000,000 and current annual sales volume is about $4,000,000. Purchase was by undisclosed cash settlement of litigation in federal and Illinois courts. Keystone has furnished a substantial portion of steel used by National.

Standard Tube Co., Detroit, has appointed the Union Hardware & Metal Co., Los Angeles, as southern California distributor of its welded steel tubular products.

Trundle Engineering Co., Cleveland, has opened an eastern office in the Graybar building, New York, with Hamilton B. Bole, formerly president, Barst, Forster, Dixfield Co., New York, in charge.

General sales offices of Tolhurst Centrifugal division, American Machine & Metals Inc., 100 Sixth avenue, New York, will be transferred June 1 to East Moline, Ill., where the company's manufacturing plants are located.

Pidgeon-Thomas Iron Co., Memphis, Tenn., has been appointed distributor for the entire line of coated welding electrodes and gas welding wires manufactured by Page Steel & Wire division of American Chain & Cable Co. Inc., Monessen, Pa.

Baldwin-Duckworth Chain Corp., Springfield, Mass., has established a warehouse and sales and engineering offices at 276 Canal street, New York. K. B. Brandenburg, who has been transferred from the Detroit office, will be in charge. F. T. Lange will assume charge of Detroit operations and office at 2-165 General Motors building, replacing Mr. Brandenburg.

Blaw-Knox Co., Pittsburgh, has received an order from Heyl & Patterson Inc., for six all-welded hoisting drums to be used in hammer head cranes for a United States navy yard. Each drum is to be 10 feet in diameter and 18 feet long, 2½-inch plate. Contract covers fabrication of drums and machining of a large gear for each drum, each gear measuring 14 feet six inches outside diameter.

April Exports in Slight Decline

■ STEEL and iron exports in April, excluding scrap, totaled 153,884 gross tons, compared with 162,098 tons in March, a loss of 8214 tons, according to the metals and minerals division, department of commerce. Total exports in April were 394,008 tons, compared with 474,360 tons in March, a decline of 80,352 tons, or 17 per cent. This loss was almost entirely in scrap, which was 72,138 tons less than the preceding month.

Other items showing smaller shipments included steel bars, which fell from 12,702 tons in March to 7569 tons in April, nonalloy plates from 27,942 tons to 23,252 tons and black sheets from 27,805 tons to 21,568 tons.

For five months this year exports, excluding scrap, were 585,487 tons, compared with 801,089 tons. With scrap included exports for this period were 1,590,730 tons, compared with 2,063,016 tons in the same months last year, a decline of 23 per cent, scrap exports being 256,744 tons smaller.

The smaller total in April probably is largely accounted for by the shorter month.

UNITED STATES EXPORTS OF IRON AND STEEL PRODUCTS

Gross Tons

Articles	April 1939	March 1939	Jan. thru April
Pig iron	1,599	1,059	13,507
Ferromanganese and spiegeleisen	7	18	34
Other ferroalloys	50	68	243
Ingots, blooms, etc.:			
Not containing alloy	4,620	5,709	33,835
Alloy, incl. stainless	1,614	408	6,338
Steel bars, cold fin.	447	498	2,777
Bars, iron	72	58	245
Bars, concrete	2,970	2,181	9,000
Other steel bars:			
Not containing alloy	7,569	12,702	34,231
Stainless steel	51	117	183
Alloy, not stainless	752	993	4,241
Wire rods	1,791	2,654	5,158
Boiler plate	422	171	2,275
Other plates, not fab.:			
Not containing alloy	23,252	27,942	81,269
Stainless steel	5	8	22
Alloy, not stainless	83	70	261
Skelp, iron or steel	824	714	2,917
Sheets, galv. iron	834	385	1,983
Sheets, galv. steel	8,759	7,202	28,720
Sheets, "black" steel:			
Not containing alloy	21,568	27,805	93,527
Stainless steel	92	76	261
Alloy, not stainless	195	290	863
Sheets, black iron	377	616	2,146
Strip steel, cold-rolled:			
Not containing alloy	1,446	1,436	7,071
Stainless steel	67	21	189
Alloy, not stainless	52	23	117
Strip steel, hot-rolled:			
Not containing alloy	2,712	2,608	16,165
Stainless steel	46	.....	146
Alloy, not stainless	4	2	10
Tin plate, taggers' tin	16,740	16,735	57,113
Terne plate	556	232	1,167
Tanks, except lined	2,081	2,881	6,778
Shapes, not fabricated	7,219	6,522	24,748
Shapes, fabricated	3,180	3,422	10,200
Plates, fabricated	281	315	896
Metal lath	78	102	344
Frames and sashes	99	91	336
Sheet piling	727	140	1,580
Rails, 60 lbs.	6,559	3,465	16,617
Rails, under 60 lbs.	226	123	531
Rails, relaying	.....	686	1,840
Rail fastenings	561	732	2,767
Switches, frogs, crsgs.	320	302	863
Railroad spikes	253	212	1,248
R. R. bolts, nuts, etc.	187	213	596
Boiler tubes, seamless	604	651	2,079
Boiler tubes, welded	96	5	112
Pipe:			
Smls. casing, oil-line	5,930	5,129	19,142
Do. welded	448	274	1,076
Seamless black	590	452	2,198
Pipe fittings:			
Mall. iron screwed	323	270	1,150
Cast iron screwed	228	175	633
Pipe and fittings for:			
Cast iron pressure	3,689	1,274	8,187
Cast iron soil	594	546	2,438
Pipe, welded:			
Black steel	1,602	1,280	5,344
Black wrought iron	137	424	1,200
Galvanized steel	1,934	2,368	7,369
Galv. wrought iron	196	160	941
*All other pipe, fittings	336	302	1,172
Wire:			
Plain iron or steel	1,888	3,154	8,409
Galvanized	1,840	1,773	8,208
Barbed	3,626	3,404	11,346
Woven-wire fencing	240	364	1,009
Woven-wire screen cloth:			
Insect	37	39	139
Other	127	128	478
Wire rope and cable	511	288	1,420
Wire strand	79	127	348
Electric welding rods	153	147	450
Card clothing	9	5	23
Other wire	629	577	2,226
Wire nails	1,486	1,497	5,687
Horseshoe nails	53	87	259
Tacks	26	21	82
Other nails, staples	254	351	1,166
Bolts, machine screws	722	774	2,631
Castings:			
Gray iron (incl. semi steel)	459	309	1,246
Malleable iron	71	118	441
Steel, not alloy	56	57	339
Alloy, incl. stainless	54	116	448
Car wh'ls, tires, axles:			
† Wheels and tires	1,095	1,094	3,635
† Axles, no wheels	923	743	2,298
† Axles, with wheels	32	587	1,253
Horseshoes and calks	83	6	120
Forgings, n. e. s.:			
Not containing alloy	1,165	666	2,846
Alloy, incl. stainless	212	349	641
Total	153,884	162,098	585,547
Scrap, iron and steel	237,691	310,223	996,052
Scrap, tin plate	762	866	3,290
Tin plate circles, strips, cobbles, etc	636	437	2,401
Waste-waste tin plate	1,035	736	3,440
Total scrap	240,124	312,262	1,005,183
GRAND TOTAL	394,008	474,360	1,590,730
Iron ore	312	65,890	67,525

*New class. Includes flanged malleable cast iron fittings, expansion joints, and riveted pipe and fittings.
†New class.

Seasonal Variations Are More Pronounced

■ Seasonal variations in ingot production have become marked in recent years, particularly in period 1929-1937 when consumer goods industries gained much ground at expense of heavy industries, according to the American Iron and Steel institute. There also has been a change in the months in which high or low output prevails, the year's peak now coming generally in the spring rather than autumn.

Among principal causes for greater spread between high and low months in this period are the greater capacity of both the steel industry and its consumers, as related to demand and the continued rise in demand for consumer goods.

Labor Receives I... Share of Steel D...

■ Labor's share of ste... to 41½ cents last year... of nearly 10 per cent o... 14 per cent over 1929, ... the American Iron and ... tute.

Steel taxes took 5½ c... 40 per cent more than ... about the same as in 19... dustry's total tax bill re... est point in history. S... tion in taxes paid last ... result of year's unprof... tions was largely offset ... in social security tax r...

Shares last year goi... holders and to indust... were reduced to the van... About 7 cents of each ... charged off for depreciat... pletion. Charges on bon... ed to 2 cents per dolla... sales, against 1 cent in 1... cents in 1929.

Cargo Vessels La... In "Twin" Ceremo...

■ Two cargo vessels, ... CHALLENGE and the S. S. R... first of six which Federal ... ing & Dry Dock Co., Uni... Steel Corp. subsidiary, i... for the United States ma... mission, were launched ... Kearney, N. Y.

New ships have registry ... 7400 tons and are 450 ... Names were adopted fr... American clipper ships.

Inland To Rebuild Blast Furnace Plan...

■ Arthur G. McKee & C... land, have been awarded co... rebuild Inland Steel Co.'s N... furnace plant at Indiana ... Ind. The plant was buil... McKee company in 1907 ... duced the first pig iron ... Indiana.

A new and larger blast ... will be built on the site ... ore bins and handling eq... gas cleaning plant, and h... stoves. Work will be comp... about Jan. 1.

■ Monthly examination ... sheets by representatives o... ern Bar Iron association an... gamated Association of Iro... and Tin Workers developed ... of 2.20 on boiling, bar and ... mills and 2.30 on guide and ... for May. This compares w... and 2.35, which had been i... since July, 1938.

blic Sues

or Damages

o recover $7,500,000 dam-
the CIO, SWOC, John L.
ilip Murray and nearly
rs and union officers as
1937 strike activities was
epublic Steel Corp. in fed-
ict court, Cleveland, last

ks to hold union leaders,
anizations and individual
s responsible for business
extraordinary expenses in-
s a result of an alleged
y in violation of the Clay-
nd Sherman act.

c charges unlawful acts of
timidation, threats, vio-
struction of property, in-
persons and obstruction of
e to and from the plants
t of a conspiracy to compel
any to sign a proposed col-
bargaining contract with

es directly sustained as a
the strike activity are set
petition at a minimum of
) and under the Clayton act
pany is entitled to recover
ven damages threefold.

mpany Cites Losses

of the claim includes losses
by the forced closing of
at Cleveland, Youngstown,
and Massillon; the abnor-
t of operating under siege
ers at Warren, Niles, and
the Canton plants; the cost
ecting properties and per-
ainst harm by strikers; and
of business due to the block-
f plants which meant the
sales and the inability to
for delivery of products
period of more than six

lic cites as evidence of its
the blockading of employe
hes to its plants, intimida-
employes and presence of
mobs who forced men going
rom work to run the gaunt-
r barrage of stones and other
. Defendants are charged
ovoking riots at which they
eir sympathizers attacked
ed upon law-enforcement of-
and with obstructing the
blowing up or otherwise de-
g railroad tracks and other-
terferring with shipments to
m the company's plants.

ded among individuals named
ndants are 47 who were ar-
and convicted of illegal acts
ence during the 1937 strike.
ar suit recently was won by
Hosiery Co., Philadelphia,

which was awarded a $711,932 triple damage verdict against the CIO for losses incurred during a sitdown strike.

That present antitrust legislation may provide employers a new weapon to curb illegal strike activities of unions is indicated by the Apex decision, by the filing of similar suits by three New England trucking companies, and the Republic action. John L. Lewis and the CIO already have started a campaign to amend antitrust laws to exempt labor unions (STEEL, May 15, p. 24).

Republic's suit balances in a sense an action for $7,500,000 filed against the company May 15 by SWOC seeking back wages for strikers who participated in the 1937 shutdown.

District Steel Rates

Percentage of Ingot Capacity Engaged In Leading Districts

	Week ended May 27	Change	Same week 1938	Same week 1937
Pittsburgh ...	36	+ 3	22	94
Chicago	49	+ 3.5	29	75
Eastern Pa...	37	None	27	72.5
Youngstown..	45	+ 3	27	30
Wheeling	59	+ 3	41	96
Cleveland ...	54	+ 4	26	65
Buffalo	42	+ 4.5	21	91
Birmingham..	57	None	69	83
New England.	45	None	30	55
Cincinnati ...	52	+ 8	28	90
St. Louis.....	39	None	33.3	94
Detroit	57	— 2	18	95
Average....	48	+ 2.5	28.5	75

Surveys Marketing Research Programs

■ Average manufacturer carrying on marketing research studies spends $21,000 per year for work done within the organization and $8000 a year for marketing research purchased from outside agencies, according to a survey by the commerce department. Survey is based on questionnaires sent to 556 manufacturers of whom 188 were doing research work in the field of distribution.

Report is designed to guide manufacturers who are, or are contemplating, engaging in marketing research programs. Information contained in the study includes amount of expenditures required, different types of research organization, and detailed classification of activities supplemented with illustrations of the actual use of research when applied to practical problems of manufacturers.

Copies may be obtained from the bureau of foreign and domestic commerce, Washington, or from bureau's district offices, for 25 cents.

PRODUCTION

■ STEELWORKS operations last week rose 2.5 points to 48 per cent, the first upward movement in 12 weeks. Substantial advances were made in seven districts, a small loss in one and four showed no change. A year ago the rate was 28.5 per cent; two years ago 75 per cent.

Cleveland—Up 4 points to 54 per cent, highest in two months. Only small changes are indicated this week.

Youngstown, O.—Rise of 3 points to 45 per cent resulted from addition of three open hearths, giving 43 open hearths, three bessemers and eight blast furnaces in production. Further rise of 3 points to 48 per cent or better is expected this week. Steelworks will not close for Memorial day.

Detroit — Down 2 points to 57 per cent, resulting from minor adjustments in size of units operated by one producer. No material change from the prevailing level is in prospect.

Chicago — Advanced 3.5 points to 49 per cent, the first gain since the last week in March. This is the level of the second week in January and compares with 28.5 per cent a year ago. Inland and Carnegie-Illinois each has added a blast furnace.

Birmingham, Ala. — Steady at 57 per cent, with 12 open hearths in production.

St. Louis — Unchanged at 39 per cent, with one producer planning addition of an open hearth this week.

Cincinnati — Gained 8 points to 52 per cent, one open hearth being added to build up ingot stock for a repair shutdown.

Central eastern seaboard — Continues at 37 per cent for the third week, with a leading interest close to 50 per cent.

Pittsburgh — Increased activity by several large producers lifted the rate 3 points to 36 per cent. Further gain is indicated for this week.

Wheeling — Resumption by one plant after a shutdown of a week caused 6 points increase, to 59 per cent.

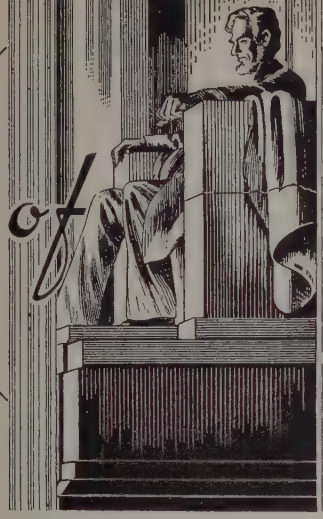
New England — Holds at 45 per cent for the fourth week. The same schedule is planned for this week.

Buffalo — Rose 4.5 points to 43 per cent as result of heavier orders. Two open hearths have been added.

■ Shipments of household washing machines by manufacturers in April totaled 116,199, compared with 95,158 in April, 1938, an increase of 22.1 per cent, according to the American Washer and Ironer Manufacturers' association.

MESTA WORKING RO
FOR FOUR HIGH HOT MILL

MESTA MACHINE COMPANY, PITTSBURGH,



Windows of WASHINGTON

L. M. LAMM
gton Editor, STEEL

WASHINGTON

his testimony before
ary national economic
ecently, Edward R. Stet-
hairman of the board of
States Steel Corp., was
effect of modernization
nber and wages of em-

Mr. Stettinius filed with
tee the following infor-
addition to his former

h labor-saving machines,
oduced in the Corpora-
s, do displace hand-labor
t more product per hour
ller number of operators
ormerly the case, the fact
e installation of labor-
chinery has not resulted
ion of the number of em-
a whole. At correspond-
of operation the subsid-
he Steel corporation are
more men at higher rates
d with shorter hours of
ever before in its his-

ployment Goes Up

example, in 1929, when
ration produced over 15,-
ns of rolled and finished
ucts, it employed 253,138
se average earnings were
average number of hours
eing 46 hours per week;
when production was less
0,000 tons, the corporation
261,293 men whose average
were $32.51, the average
f hours worked being 38
week.

xplanation of the increase
mber of employes is that
labor have been shortened
otation of the product to
requirements has necessi-
ther processing with addi-
n-hours of work. Further-
tes of pay have been in-
nd much of the very ardu-
labor formerly involved
shifted to the machine

with the net result that at comparable output a larger number of employes now enjoy better working conditions and higher earnings than before.

"This does not take into account the indirect increases in general employment both in the manufacture of new equipment and in the subsequent processing of the improved steel products, which have in fact opened up many new fields and extended old fields of employment.

"Many of the products manufactured by the former methods could not be sold today in competition with the superior products now made."

LARGE SUBSIDY URGED TO REBUILD RAILROADS

Railroad equipment makers and sellers through the Railway Business association have prepared for congress a report urging a five-year $550,000,000 annual subsidy to modernize railroad ways, structures and rolling stock.

The report says that after eight years of financial stringency railroads have accumulated an undermaintenance estimated at $1,000,000,000 and are $300,000,000 behind on equipment needs. With fullest possible repairs cars and locomotives would be insufficient to carry loads of 10 to 15 per cent over 1933-37 peaks. The report also asks for carrier consolidations and extension of carrier legislation.

CONFEREES AGREE ON STRATEGIC MATERIALS BILL

Conferees on the strategic materials bill have reached an agreement whereby the senate conferees accepted $100,000,000 for purchase of stockpiles, including manganese, chromium, tin and other essential materials, instead of $40,000,000, as provided in the bill as it passed the senate.

There was considerable misunderstanding about the amount to be appropriated because statement was made on the senate floor when the bill was under discussion that the President would veto the bill if $100,000,000 was provided. It developed, subsequently, that this was incorrect.

Also, the conferees have stricken out of the bill references to barter trade and other tariff matters, so that the bill is much as it passed the senate except for the amount of appropriation.

MURPHY SEEKS TO MAKE CLEAR ANTI-TRUST STAND

In a statement on anti-trust policy which Attorney General Murphy has been promising to newsmen for several weeks, he said last week that his department will endeavor to make its own views as to what the law requires of business men as clear and as unequivocal as possible.

"In this way," he said, "it hopes to be genuinely helpful to business men seeking by voluntary action to eliminate business practices which are economically harmful to industry, to competitors, and to the general public. The department has, of course, no authority to grant immunity from the anti-trust laws or to modify or suspend them.

"In the enforcement of anti-trust laws both civil and criminal remedies are available to the government. In many cases, use of the criminal process is necessary and unavoidable because the criminal penalty at present is the only effective deterrent and also because in many cases a grand jury inquiry is the only means by which the government can obtain satisfactory evidence of widespread law violation. It must be recognized that if injunction by civil decree were the sole consequence of violating the laws they would soon become ineffective. We are agreed that the criminal remedy should not be employed in an irresponsible manner."

He called attention to the proposed bureau of industrial economics about

which the President has spoken several times and in this connection said that "the department is already engaged in conversations with the department of commerce looking towards creation of such a bureau. The research facilities and personnel of such a bureau will be helpful to the department in the intelligent enforcement of the laws and helpful to business generally in maintaining healthy but orderly competition."

AGREE TO SCRAP TAX ON UNDISTRIBUTED PROFITS

Following his statement before the American Retail Federation Forum last week that he would consider changes in taxation under certain conditions, President Roosevelt is said to have reached an agreement with leaders in congress. The understanding reached between the President, Senator Pat Harrison, Mississippi, and Senator James F. Byrnes, South Carolina, included lapse of the 2½ per cent tax on undistributed profits earnings when it expires Dec. 31; substitution of a flat 18 per cent tax on net corporate earnings above $25,000; continuance of nuisance taxes; possible concessions to corporations allowing losses to be passed on for two or three years and increase in present $2000 exemption allowance for losses.

The plan will require approval by the house ways and means committee, as all revenue legislation must originate in that branch.

LAKE BULK SHIPPERS EXEMPTED FROM RAIL BILL

Partial victory was won by Great Lakes shippers when the senate recently adopted an amendment to the Wheeler bill, providing that vessels on the Great Lakes competing with Canadian bulk carriers shall not be subject to rate regulation by the interstate commerce commission.

While shippers sought total exemption for all types of lake carriers, the amendment applies only to bulk carriers transporting iron ore, coal, limestone and grain. However, it is estimated that about 90 per cent of the lake shipping companies and 60 per cent of the annual bulk tonnage would be exempted.

Despite this concession, senate spokesmen for the water carriers are expected to press their fight to recall the Wheeler bill and turn it over to the senate commerce committee for further study.

FOREIGN TRADE WEEK WAS WIDELY OBSERVED

Observance of last week's national foreign trade week was highlighted by a speech of Secretary of Commerce Hopkins at the world trade dinner in New York. The speech was broadcast and sent by short wave stations to all nations of the world.

The week-long program of trade promotion sponsored by the United States chamber of commerce with co-operation of the department of commerce and other government agencies is an annual event. It is estimated that approximately 5000 meetings were held throughout the United States by trade and civic organizations to observe national foreign trade week. Division heads and foreign service officers of the department of commerce made talks at meetings in various parts of the country. W. A. Janssen, chief of the metal and minerals division, addressed a group meeting at Atlanta, Ga.

HOPKINS SEEKS TRAINED BUSINESS MEN AS AIDS

Secretary of Commerce Hopkins has transmitted to congress through President Roosevelt a communication asking for an additional $235,000 appropriation for the coming fiscal year to take care of what he designates an executive staff. The talk in Washington is that he is anxious to bring a corps of businessmen to Washington to help him. Of the amount asked, $225,000 would be for salaries and $30,000 for traveling and for other contingent expenses.

In transmitting the estimate to congress, Harold D. Smith, director of the budget, made the following statement:

"These supplementary estimates are for the purpose of providing a highly qualified executive staff in the department of commerce to participate with the secretary in appraisals of the larger problems that affect the commerce and industry of the country, in assisting congress in drafting and considering legislation affecting business, in maintaining contact with various agencies of the government dealing with particular phases of the national problem having a bearing on affairs of industry, and for developing and carrying through new constructive work, that will be welcomed by business men, directed toward improvement of business conditions at the earliest possible moment.

"The purposes for which these supplemental estimates are submitted require a new kind of ability and a new kind of energy in the department of commerce quite different from that required to carry out the normal administrative functions of the department, and their transmission to congress is recommended."

NAM URGES REPEAL OF WALSH-HEALEY ACT

A. C. Moore, president of the Chicago Railway Equipment Co., appeared on behalf of the National Association of Manufacturers before the senate committee in opposition to amendments to the Walsh-Healey act, as proposed by Senator Walsh.

Mr. Moore not only urged the committee to disapprove the Walsh amendment proposal, but also urged repeal of the entire act. His opposition in the Walsh amendment proposal would extend the law to cover contracts on governmental work in excess of $2000 or more. The present law covers contracts of $10,000 or more, for which minimum wages may be prescribed by the secretary of labor. Another provision would "blacklist" any contractor or subcontractor held in violation of national labor relations acts or state labor relations laws from participating or holding any government contract.

He summarized the attitude of the association in the following three points:

First: Since congress has enacted a general law regulating minimum wages, maximum hours and the employment of minors, no longer can understand the necessity for continuation of the Walsh-Healey act. We therefore recommend its repeal.

Second: In the event repeal is not now feasible, we recommend additional amendments to bring the requirements of the act into conformity with provisions of other labor standards measures since 1938.

Third: The NAM opposes any extension of the law such as would believe would be accomplished if certain amendments contained in the Walsh bill (S. 1032).

GOVERNMENT IRON, STEEL PURCHASES TOTAL $

During the week ending the government purchased $401.31 worth of iron and steel products under the Walsh-Healey act as follows: Struthers Wells Corp., Titusville Division, Titusville, Pa., $2,... win Southwark Corp., Pa., $38,850; Western Pipe Co. of Calif., San Fra... 919.56; Consolidated Steel Portland, Oreg., $11,807; Co. Inc., Washington, Southwest Welding & Manufacturing hambra, Calif., $73,024; Steel Co., San Francisco, Bethlehem Steel Co., San... $13,048.24; Republic Steel Cleveland, $27,291.63; linois Steel Corp., ... $10,660 (estimated); Colt Co., San Francisco, $43,... hem Steel Co., Los An... 270.33; American Bridge ... ver, $124,078; and Joseph Co. Inc., Brooklyn, N. Y.

...TION

...SE CONTRACTS ...LDERS' BACKLOGS

...rders for military air- ...laced last week by army ...dditional awards are ex- ... start of the new fiscal

...,000 contract went to ...rcraft Co. Inc., Santa ...lif., for all-metal, 400- ...ur attack-bombers. War ... will supply engines, pro- ...lo and armament. Its ... up to a record $48,000,- ... s is assured near-capac- ...ns for more than a year. ... for attack-bombers also ... by Glenn L. Martin Co., ... $500,000; and Stearman ... Boeing Airplane Co., ...ans., $500,000. Ordered ...sky Aircraft Corp., Farm- ... I., were 13 all-metal, ... fighting planes, powered ... & Whitney, and costing

...tical equipment allotted ... by the navy: Pratt & ...ivision of United Aircraft ...st Hartford, Conn., en- ...0,694, and spare parts, ... Hamilton Standard Pro- ...ision of United, East Hart- ...eller assemblies, $117,125; ...olidated Aircraft Corp., ..., wings, $37,395.

... buying of American transport planes is reported increasing. Recent transactions: Lockheed Aircraft Corp., Burbank, Calif., two Lockheed 14s costing $180,000 for the French air ministry; Beech Aircraft Corp., Wichita, Kans., three twin-motored ships for Tata Airways, India.

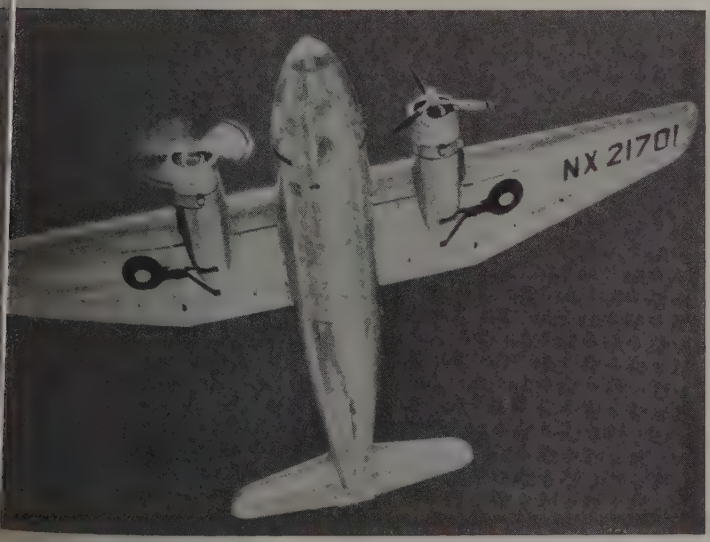
With sizable orders from the navy, Grumman Aircraft Engineering Corp., Bethpage, L. I., is stepping up production and expanding its plant. Vega Airplane division of Lockheed, Burbank, Calif., proposes to erect a 65 x 112-foot assembly building.

Ground has been broken by Ryan Aeronautical Co., San Diego, for a 200 x 275-foot airplane factory estimated to cost $100,000. Structure will comprise steel frame, walls and roof of corrugated sheet, steel doors, crane runway and sprinkler system.

American Aircraft Co., Los Angeles, has acquired the plant and other assets of Security Aircraft Corp., and is to manufacture airplanes and motors. Company is marketing preferred stock, will install new machinery and extend its factory.

Now being organized by a business men's civic association, Du Bois-Martin Aircraft Corp., Du Bois, Pa., plans to build on a 500-acre site an aircraft plant costing more than $200,000 with equipment. Military planes and spare parts will be produced.

New Features Increase Flying Speed



...t developments in aircraft construction are demonstrated by the new DC-5 all-metal transport. With one engine operating, propeller of the ... automatically "feathered" into the wind to minimize drag. Shown snugly ... into wing recesses are rear wheels of the tricycle landing gear, while ...eel has been lifted into the nose. Designed for "feeder lines," plane carries 16 passengers, weighs nearly 10 tons

MEETINGS

AIME SECTION ANNOUNCES OPEN-HEARTH SESSIONS

■ PITTSBURGH local section, National Open Hearth committee, American Institute of Mining and Metallurgical Engineers, will conduct its sixth open-hearth meeting at the bureau of mines auditorium, Pittsburgh, June 2. An afternoon session will be devoted to open discussions on refractories, steel pouring practice, and open-hearth slag control; the evening session to slag control, acid melting practice, and general practice. Dr. John Chipman, professor of metallurgy, Massachusetts Institute of Technology, Cambridge, Mass., will present the only formal address, on "Oxidizing Power of the Slag."

ENGINEERS WILL CONVENE AT SAN FRANCISCO FAIR

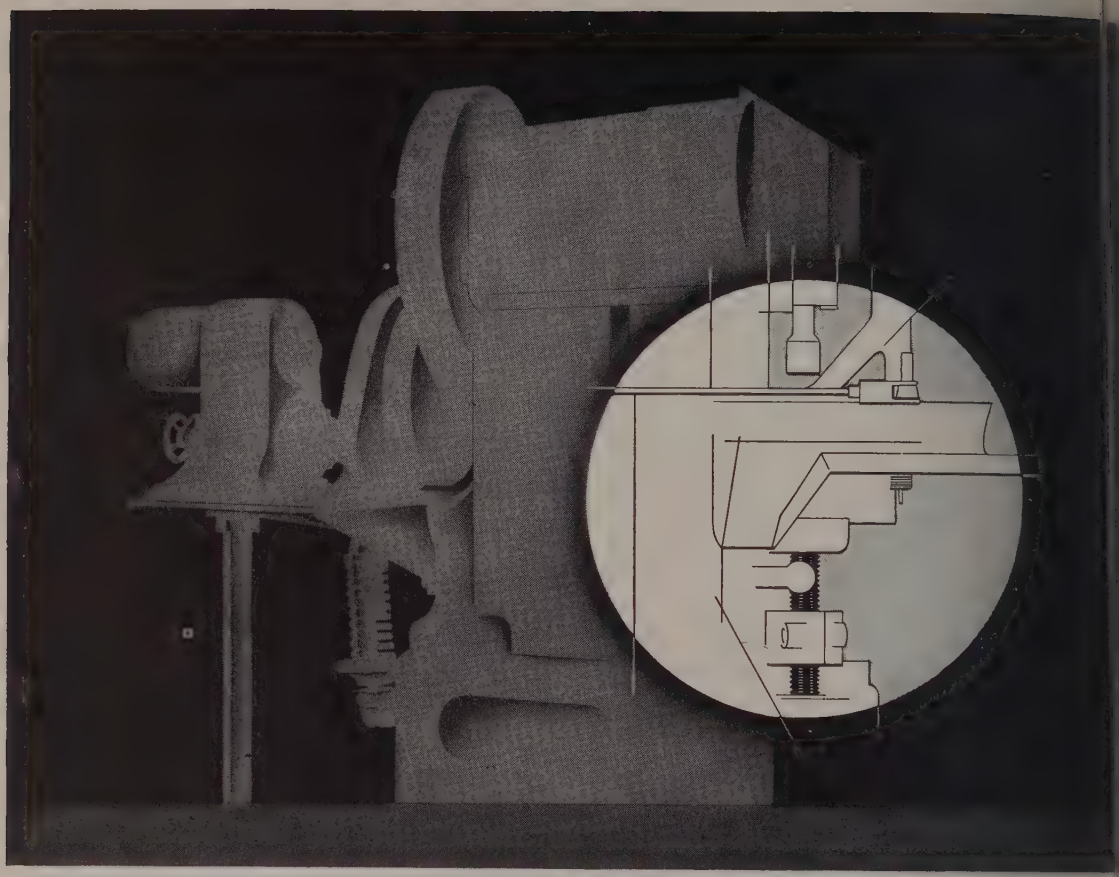
American Society of Mechanical Engineers, American Institute of Mining and Metallurgical Engineers, and the American Society of Civil Engineers will hold conventions at the Golden Gate International exposition on San Francisco bay, July 10-17. Engineers' Day, sponsored by the San Francisco Engineering council, will be held at the 400-acre World's fair on Treasure island during the same week. Exhibitors in the mining and engineering field will co-operate by conducting special demonstrations during the conventions.

Continuous Mill Made Less Labor, More Jobs

■ Continuous sheet mills have not reduced employment, Bennett Chapple, assistant to Charles R. Hook, president, American Rolling Mill Co., Middletown, O., told the annual convention of the National Association of Purchasing Agents in San Francisco, May 22.

"Even though men saw their jobs change," said Mr. Chapple, "in the long run they were not forced out by machinery. There are 1.57 jobs today per ton of production, compared to 1.34 in the handmill days, a 15 per cent increase."

The continuous mill met increased demand for steel sheets for automobiles and household appliances, he stated. It took the burden off men's shoulders and put it on the machine. The result was an increase in the proportion of light steel to total output, from 7 per cent in 1918 to 21.5 per cent in 1938. This reflected the larger production of those articles that constantly improve the American standard of living.



TO REDESIGN OR NOT?

THAT WAS THE QUESTI

Finding just the right material for a single trouble-making part sometimes saves redesigning an entire machine; and that means a saving all around.

For example: breakage of the lower die carrier of a 15-ton medicinal pellet press made it look for a while as though some drastic changes in design would be required — with consequent increased manufacturing costs, to say nothing of loss of interchangeability.

Then the manufacturer adopted Chrome-Molybdenum (SAE 4140) Steel, which combines high tensile and shock-fatigue strength. That was two y There has not been a single failure since. ing has been obviated, interchangeability p customers pleased.

Similarly, Molybdenum Steel may prov swer to your special service problems. Our book, "Molybdenum in Steel", giving practi will be sent free on request to production e and engineers interested in taking adva modern steels.

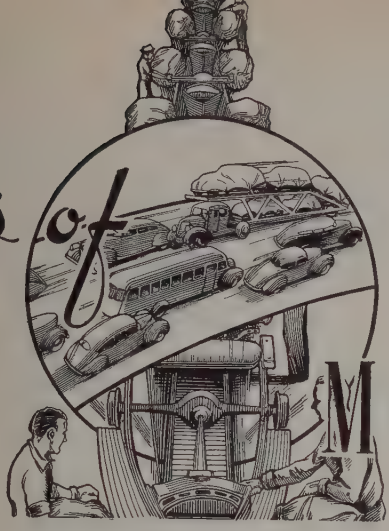
PRODUCERS OF MOLYBDENUM BRIQUETTES, FERRO-MOLYBDENUM, AND CALCIUM MO

Climax Mo-lyb-den-um Compa

500 Fifth Avenue · New York Ci

MOLY

Mirrors of MOTORDOM



y A. H. ALLEN
etroit Editor, STEEL

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DETROIT

D planning of Henry more was vindicated last ord operations continued uninterrupted in the face disturbance which within closed 18 major automo- and a number of smaller ts.

pendent upon Briggs Mfg. large share of body re- s, Ford is now virtually ed in this respect, follow- tion of the extensive new body plant at the Rouge. e the latter structure was it was common talk that ted a hedge against labor es at Briggs, and so it has be. Briggs still supplies d requirements, but not e amount of two or three o. Lincoln-Zephyr and sedan bodies still come gs, and the Lincoln plant forced to suspend opera- ng with ten plants of Corp. here and in Indiana e supplied by the seven iggs plants.

the tieup is estimated to 0,000 workmen, as well as ly output of some 20,000 les.

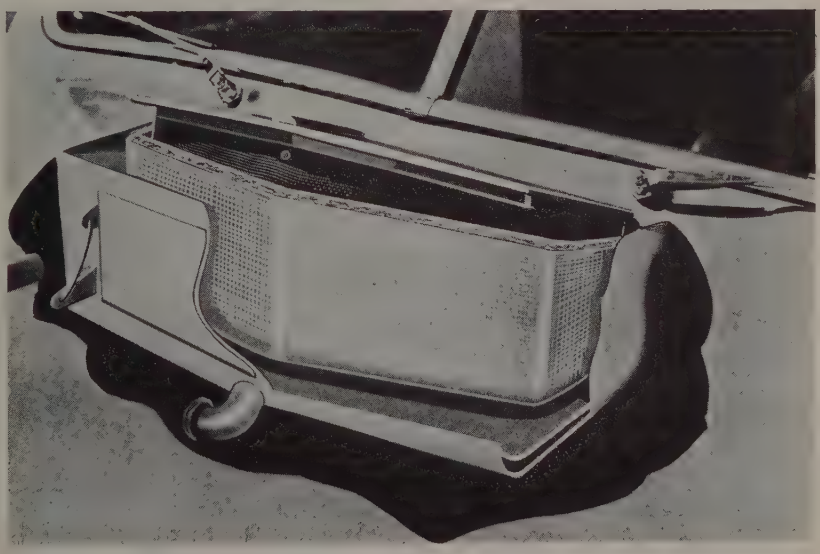
hy a strike at Briggs? Be- e company's contract with expired last Monday, and presentatives walked out of ons on a new contract for ed reason the company t adjust immediately a list inor grievances or fancied es on the part of individual s in Briggs plants. After pse of negotiations, a strike ed, and within 24 hours all iggs plants were dark and vith small groups of pickets g in circles outside them, placards with the usual ex- ns.

l labor concilator James F. rrived on the scene Tuesday and attempted to bring the warring parties to a meeting, without much success at first. Emil Mazey, Briggs UAW leader, declared: "You have my telephone number; when you are ready to negotiate you can call me."

W. P. Brown, Briggs president, declared that inasmuch as the company's position had been made public several times and was well known to all concerned, he felt the controversy had perhaps passed beyond the point of mediation. The company, in newspaper advertisements and otherwise, has made plain its willingness to arbitrate all grievances and proceed with negotiations on a new contract, but charged that Mazey was trying to "make every employe of Briggs Mfg. Co. pay tribute to him in the form of union dues before he will be permitted to earn his livelihood." This referred probably to the union's demand for a "union shop" clause in a new contract which would require all employes to be members of the UAW-CIO. It is known that the UAW is highly organized at Briggs, likely more so than in other auto plants, but it is doubtful whether the company would want to be the first to grant a union-shop contract in the automotive industry.

These are dark days for Walter O. Briggs, chairman of the company,

Cowl Ventilator Traps Dust and Water



■ New type of cowl ventilator developed for 1939 De Soto models contains a filtering element which removes dust and dirt from incoming air, plus a special built-in steel trap to catch and drain off water. Clean, dry air thus is admitted to the car interior and no difficulty is experienced if cowl is left open during rainstorms. Heater used in connection is provided with fresh air intakes

with his Detroit ball club near the bottom in the American League and his seven plants locked up. There may even be some connection between these two apparently unrelated factors, for the "man on the street" in Detroit is an ardent baseball fan, and when his club is losing he is quick to blame the owners and to believe rumors that the "ball club is being run just like the factory," etc. If the Detroit Tigers were leading the American League, a settlement of the Briggs tieup might come a lot more quickly.

Center of Briggs operations is the vast Mack avenue plant where bodies for the various Chrysler divisions are fabricated and assembled, and which has been operating four days per week. The Vernor highway plant is focal point of tool and die activities and about 1200 have been busy here on production tool equipment for 1940 models, chiefly Chrysler. Convertible, limousine and special bodies for Chrysler also are produced here.

Lincoln-Zephyr bodies are assembled in the Meldrum plant on the basis of about 400 per week. Mercury sedan bodies are supplied by the Briggs Highland Park division. The Hamtramck plant concentrates on plumbing ware and has been operating at capacity, with backlogs sufficient for well through the summer.

No Violence So Far

The new accessories division on Eight-Mile road has been supplying moldings and body trim parts, as well as sheet metal fabrication for the plumbing ware division. A plant in Evansville, Ind., also idle, supplies bodies for Dodge and Plymouth midwest assemblies. In all, the company employs about 15,000 men, being the largest nonintegrated automotive supplier in the district.

The strike so far has been marked by total absence of violence. It was called by the CIO wing of the UAW which now appears to have eclipsed the Homer Martin wing, the latter now being in process of taking a referendum on affiliation with the American Federation of Labor. No love is lost between these rival factions of the old UAW, and frequently altercations spring up between them, with the Martin following usually on the losing end.

A completely rewritten labor relations bill, introduced originally in the state legislature by the late Governor Fitzgerald, and passed in rather radical form by the house, later was redrawn by the senate and passed Tuesday. It calls for the appointment of a three-man labor board by Governor Dickinson, but he has not yet approved the bill and has not considered the appointment of any board members. Considerable doubt is expressed locally over the effectiveness of this "football" bill which has been kicked all around the state legislature, and in its present form represents the thinking of a preponderantly heavy farmer majority which may not have much real appreciation of industrial labor problems.

■ SEVERAL tooling and equipment programs of importance are up in plants here, not directly concerned with new automobile models. A Chrysler Corp. division is taking figures on a fair amount of machinery to be used in the manufacture of gun carriages and recoil mechanisms for the government, indicating a good-size order for such armament material either has been received or is pending. Old-timers recall that at the time of the World war, the Dodge truck plant on Lynch road was erected specifically for the manufacture of gun carriages.

Cadillac is in process of tooling up for the machining and finishing of crankshafts, camshafts and connecting rods for the new Allison aviation engine on which government orders for 550 have been received. Allison is rushing construction of a new engine plant in Indianapolis, with completion scheduled for around Sept. 1. However, Cadillac will supply the above-mentioned parts, and is setting up facilities for production of 20 units per 16-hour shift. Large [illegible] parts (crankshaft has [illegible] weight of 110 pounds) [illegible] cision necessary call fo[illegible] tention to equipment a[illegible]

General Motors is inc[illegible] large volume of equipm[illegible] a new automatic transm[illegible] here in Fisher Body bui[illegible] on Farnsworth street. [illegible] machinery may be mo[illegible] Fisher plant 66 in Fli[illegible] several years ago at a co[illegible] $1,000,000 for product[illegible] optional Olds and Buic[illegible] transmission. Buick s[illegible] discarded offering this t[illegible] although it still is availa[illegible] However, the transmis[illegible] made in Detroit is unde[illegible] of entirely new desi[illegible] hydraulic type, possibly[illegible] lines of the hydraulic t[illegible] developed for buses buil[illegible] Truck & Coach division[illegible] Pontiac. What cars in t[illegible] will offer this new trans[illegible] how much it will cost [illegible] known, but the size of [illegible] program would indicate[illegible] gree of production on [illegible]

■ PONTIAC general sal[illegible] C. P. Simpson has resigr[illegible] remove to Houston, Te[illegible] charge of a dealership t[illegible] succeeded by Don U. B[illegible] tive with General Motors[illegible] and since 1934 assista[illegible] sales manager for Pontia[illegible] of the eastern area.

Two years of metall[illegible] search on the corrosion o[illegible] cylinder heads will be s[illegible] in a report to be given [illegible] meeting of the Aluminu[illegible] tion in Chicago. An adva[illegible] reveals aluminum cyli[illegible] corrosion in general is no[illegible] problem except in certai[illegible] areas of this country wh[illegible] of high chloride content [illegible] The report also discloses [illegible] sionally amounts of chlo[illegible] enough to cause objectio[illegible] rosion are present in [illegible] cooling systems when [illegible] assembly lines, due to t[illegible] soldering fluxes or sal[illegible] for sealing porous ca[illegible] proper soluble oil corrosio[illegible] will reduce difficulties on [illegible] even in the presence o[illegible] water conditions.

Declared Alfred P. Sloa[illegible] eral Motors chairman, b[illegible] temporary national econo[illegible] mittee of the senate in W[illegible] "I see no end to the auto[illegible] advancing technology. S[illegible] we are aggressive and i[illegible] we should continue to [illegible] that respect steadily for t[illegible] or 20 years, producing b[illegible] for the same money or the[illegible] for less money." After 19[illegible]

Automobile Production

Passenger Cars and Trucks—United States and Canada

By Department of Commerce

	1937	1938	1939
Jan.	399,186	227,130	353,946
Feb.	383,900	202,589	312,141
March	519,022	238,598	389,489
April	553,231	238,133	*354,263
4 mos.	1,855,339	906,475	1,409,839
May	540,377	210,183	.....
June	521,153	189,399	.....
July	456,909	150,444	.....
Aug.	405,072	96,936	.....
Sept.	175,630	89,623	.....
Oct.	337,979	215,296	.....
Nov.	376,629	390,350	.....
Dec.	347,349	407,016	.....
Year	5,016,437	2,655,777	.....

*Revised.

Estimated by *Ward's Reports*

Week ended:	1939	1938†
April 29	86,640	50,755
May 6	71,420	53,385
May 13	72,375	47,415
May 20	80,145	46,810
May 27	67,740	45,120

†Comparable week.

	Week Ended	
	May 27	May 20
General Motors	31,680	31,885
Chrysler	5,650	17,900
Ford	20,350	20,630
All others	10,060	9,730

RICATING
HINING
EMBLING
SHING

4 PRODUCTION DOLLARS

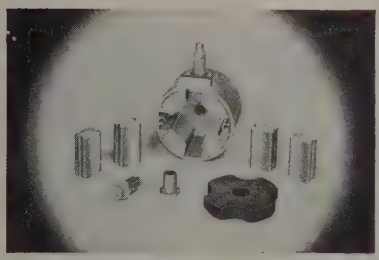
A Quiz

Q How can I get the most out of my fabricating dollar if I adopt die cast parts?

touch with your die caster as ssible in the design stage. He can e suggestions for slight design ich will result in substantial sav- duction costs.

ASSEMBLING DOLLAR

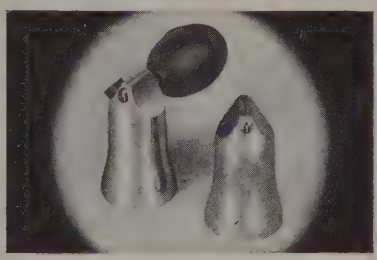
Q Is it possible for me to make use of inserts in ZINC Alloy Die Castings to stretch my assembling dollar?



A This magneto generator part called for 4 pole pieces of soft steel, an aluminum-nickel disk, a bronze bushing, and a steel support stud. These elements (all shown in the foreground) were inserted in the die casting die and a ZINC Alloy housing was cast around them. Result —7 assembly operations saved.

FINISHING DOLLAR

Q Can I be assured that the properties of ZINC Alloy Die Castings will also provide the maximum value per finishing dollar?



A If your die cast part requires a plated, organic, plastic or decalcomania coating, its smooth as-cast surface will make it economical to apply the finish — and will provide long service life. The die cast atomizer body pictured above has been given a lustrous chromium plate.

Q Can I expand my machining dollar by utilizing ZINC Alloy Die Castings?

the complexity of this die cast machine gear frame. There is no etal production method that can uch intricacy of design in one piece ut prohibitive machining costs.

THE THEME of this advertisement is production economy, but it would be a mistake for the reader to evaluate ZINC Alloy Die Castings on the basis of economy alone. The physical characteristics of these metal parts are a kindred story — an impressive one. For further information consult any commercial die caster — or write to The New Jersey Zinc Company, 160 Front Street, New York City.

ZINC ALLOY DIE CASTINGS

esearch was done, the Alloys were developed, and most Die Castings are specified with

ORSE HEAD SPECIAL (99.99+% Uniform Quality) ZINC

1938 Production of Steel Ingots, Castings, and V

All Figures in Gross Tons

ANNUAL STEEL PRODUCTION (Ingots and Steel for Castings)

Years	Open hearth			Bessemer	Crucible	Electric	Total
	Basic	Acid	Total				
1920	31,375,723	1,296,172	32,671,895	8,883,087	72,265	505,687	42,132,934
1925	37,087,342	947,146	38,034,488	6,723,962	19,562	615,512	45,393,524
1926	39,653,315	1,038,664	40,691,979	6,934,568	15,493	651,723	48,293,763
1927	37,144,268	924,067	38,068,335	6,191,727	9,036	666,087	44,935,185
1928	43,200,483	913,473	44,113,956	6,620,195	7,769	802,260	51,544,180
1929	47,232,419	1,120,469	48,352,888	7,122,509	6,645	951,431	56,433,473
1930	34,268,316	780,856	35,049,172	5,035,459	2,253	612,599	40,699,483
1931	22,130,398	379,168	22,509,566	3,023,446	1,547	410,942	25,945,501
1932	11,742,682	164,648	11,907,330	1,532,076	645	241,111	13,681,162
1933	20,057,146	324,526	20,381,672	2,428,791	681	421,203	23,232,347
1934	23,256,417	274,688	23,531,105	2,162,357	531	361,296	26,055,289
1935	30,361,237	354,192	30,715,429	2,835,031	642	541,492	34,092,594
1936	43,114,826	421,302	43,536,128	3,458,457	816	772,455	47,767,856
1937	45,772,510	499,793	46,272,303	3,449,927	934	845,537	50,568,701
1938	25,691,963	272,337	25,964,300	1,880,661	6	505,024	28,349,991

ANNUAL STEEL INGOT PRODUCTION

Years	Open hearth			Bessemer	Crucible	Electric	Total
	Basic	Acid	Total				
1920	30,926,393	759,102	31,685,495	8,778,107	70,536	347,254	40,881,392
1925	36,632,060	484,843	37,116,903	6,670,128	17,729	335,978	44,140,738
1926	39,172,688	533,285	39,705,973	6,891,502	13,452	325,278	46,936,205
1927	36,750,387	493,653	37,244,040	6,153,703	7,696	371,278	43,776,717
1928	42,818,557	454,883	43,273,440	6,591,745	6,516	453,692	50,325,393
1929	46,644,206	576,393	47,220,599	7,091,680	5,762	532,392	54,850,433
1930	33,898,518	367,181	34,265,699	5,020,588	1,563	307,418	39,595,268
1931	21,986,933	194,388	22,181,321	3,011,394	831	235,376	25,428,922
1932	11,689,495	104,794	11,794,289	1,528,544	241	141,328	13,464,402
1933	19,972,805	195,495	20,168,300	2,425,779	399	299,808	22,894,286
1934	23,235,688	201,073	23,436,761	2,162,357	531	349,095	25,948,744
1935	30,334,442	248,512	30,582,954	2,835,031	642	521,818	33,940,445
1936	43,070,917	278,406	43,349,323	3,458,457	816	704,213	47,512,809
1937	45,719,507	333,473	46,052,980	3,449,927	934	814,310	50,318,151
1938	25,666,719	194,845	25,861,564	1,880,661	6	468,610	28,210,841

PRODUCTION OF DUPLEX STEEL

Years	Gross tons	Years	Gross tons	Years	Gross tons
1920	3,279,119	1929	2,961,292	1934	591,373
1925	2,797,318	1930	2,045,277	1935	960,020
1926	2,815,980	1931	945,844	1936	2,099,102
1927	2,184,674	1932	289,263	1937	2,907,890
1928	2,232,197	1933	386,154	1938	1,183,623

PRODUCTION OF ALLOY STEEL INGOTS AND CASTINGS

Years	Ingots	Castings	Total	Years	Ingots	Castings	Total
1920	1,591,939	68,353	1,660,292	1932	757,560	41,044	798,604
1925	2,320,390	112,583	2432,973	1933	1,475,400	71,783	1,547,183
1926	2,317,313	146,101	2,463,414	*1934	1,595,544	16,731	1,612,275
1927	2,385,904	145,844	2,531,748	1935	2,087,427	32,231	2,119,658
1928	3,045,225	169,684	3,214,909	1936	2,788,100	95,522	2,883,622
1929	3,764,287	192,920	3,957,207	1937	2,975,598	57,028	3,032,626
1930	2,317,183	126,128	2,443,311	1938	1,434,801	41,547	1,476,348
1931	1,366,010	89,903	1,455,913				

PRODUCTION OF ALLOY STEEL INGOTS AND CASTINGS BY PROCESSES

Processes	1935	1936	1937	1938
Open hearth steel—basic	1,633,541	2,239,885	2,285,000	1,052,706
Open hearth steel—acid	73,400	115,766	146,835	91,151
Bessemer steel	.....	.....	.....	12
Crucible steel	154	209	241	4
Electric steel	412,563	527,762	600,550	332,475
Total	2,119,658	2,883,622	3,032,626	1,476,348

*The figures for 1934 and subsequent years include only that portion of the steel for castings which was produced in foundries operated by companies producing steel ingots.

PRODUCTION OF TIN AND TERNE PLATE AND L TERNE SHEETS

Years	Tin plate	Iron and steel terne plate and long terne sheets		
		Terne plate	Long terne sheets	Total
1920	1,374,979	35,700	34,866	70,566
1925	1,544,007	40,654	73,134	113,788
1926	1,674,322	39,922	68,062	107,984
1927	1,583,383	37,043	68,023	105,066
1928	1,714,990	33,578	90,637	124,215
1929	1,816,223	38,842	113,215	152,057
1930	1,660,325	20,585	82,533	103,118
1931	1,392,227	15,581	51,135	66,716
1932	986,217	10,882	35,408	46,290
1933	1,685,826	18,969	64,303	83,272
1934	1,502,918	32,983	67,328	100,311
1935	1,695,159	87,841	103,439	191,280
1936	2,103,153	127,056	125,352	252,408
1937	2,418,190	144,295	124,643	268,938
1938	1,430,071	114,131	73,342	187,473

PRODUCTION OF HOT ROLLED IRON AND STEEL PRO BY STATES

States	1934	1935	1936	1937
Maine, Mass., Rhode Island, Conn.	158,559	198,790	246,916	230,90
New York	800,338	959,095	1,440,038	1,831,57
New Jersey	86,466	94,097	111,047	113,00
Pennsylvania	5,619,410	6,521,515	10,032,035	11,167,74
Delaware, Md., Va.	788,824	977,361	1,367,012	1,768,75
West Virginia	797,039	1,045,051	1,191,403	1,125,38
Kentucky, Tenn., Ga., Texas	401,305	571,732	658,761	594,73
Alabama	628,409	728,390	1,087,414	1,268,17
Ohio	4,301,239	5,401,948	7,697,296	7,754,93
Indiana	2,446,052	3,276,717	4,431,090	4,896,44
Illinois	1,311,243	1,890,251	2,510,249	2,771,17
Michigan, Wis., Minn.	923,724	1,467,362	1,708,914	1,980,84
Missouri, Okla.	167,112	201,360	315,691	288,80
Colorado, Wash.	246,999	283,793	534,533	545,03
California, Canal Zone	292,787	347,090	468,980	428,88
Total	18,969,506	23,964,552	33,801,379	36,766,38

PRODUCTION OF HOT ROLLED IRON AND STEEL PROD IN 1938

FLAT ROLLED PRODUCTS:	
Plates (sheared and universal)	
Sheets	
Strip	
Hoops	
Cotton ties and baling bands	
Strip and sheets for cold reduced black plate and tin plate	
Black plate	
Total	
BARS:	
Merchant	
Concrete reinforcement	
Total Bars	
Structural shapes	
Sheet piling	
Rails	
Long splice bars, tie plate bars, etc.	
Skelp	
Blanks or pierced billets for seamless tubes	
Wire rods	
Car wheels (rolled steel)	
Cross ties	
Rolled forging blooms, billets and axle blanks	
Blooms, billets, slabs and sheet bars for export	
All other finished hot rolled products	
Total	
Grand total	

# of Finished Products, Announced by Steel Institute

All Figures in Gross Tons

PRODUCTION OF FLAT HOT ROLLED PRODUCTS BY CLASSES

	1935	1936	1937	1938
	439,362	676,799	836,226	341,633
	1,015,983	1,849,942	2,407,022	1,372,505
Total	1,455,345	2,526,741	3,243,248	1,714,138
	5,175,557	6,995,905	7,839,506	4,745,419
	89,852	109,279	102,932	66,588
and baling bands	24,719	37,781	62,515	34,042
	2,647,589	3,224,916	2,895,561	1,030,233
heets for cold reduced black tin plate	.....	.....	.....	1,503,183
Total	7,937,717	10,367,881	10,900,514	7,379,465
ATE:				
ing and terne plate	1,794,718	2,283,378	2,610,385	741,176
	265,516	346,293	343,701	83,144
Total	2,060,234	2,629,671	2,954,086	824,320
Grand total	11,453,296	15,524,293	17,097,848	9,917,923

PRODUCTION OF PLATES, SHEETS AND STRIP BY SIZES

	1935	1936	1937	1938
	(a)	(a)	(a)	(a)
AL PLATES:				
" to 48" wide—¼" and thicker	385,326	601,134	749,791	308,788
8" wide—0.1875" and thicker	54,036	75,665	86,435	32,845
Total	439,362	676,799	836,226	341,633
PLATES:				
6" to 48" wide—¼" and thicker	366,680	678,348	758,089	414,330
48" wide—0.1875" and thicker	649,303	1,171,594	1,648,933	958,175
Total	1,015,983	1,849,942	2,407,022	1,372,505
heets (c)	.....	.....	.....	4,745,419
d):				
d including 6" in width	852,856	1,009,472	920,477	450,478
6" and including 24" in width	1,794,733	2,215,444	1,975,084	(b)579,755
Total	2,647,589	3,224,916	2,895,561	1,030,233

New classification adopted January 1, 1938.

Over 6" to and including 12" from January 1, 1938.

Hot-rolled sheets—3½" and less in width by 0.0254" and less in thickness; over 6" to 6" inclusive in width by 0.0343" and less in thickness; over 6" to 12" inclusive with by 0.0567" and less in thickness; over 12" to 32" in width by 0.2499" to 0.0142" sive in thickness; over 32" to 48" inclusive in width by 0.2499" and less in thickness; 48" in width by 0.1874" and less in thickness.

Hot-rolled strip—3½" and less in width by 0.2499" to 0.0255" inclusive in thickness over 3½" to 6" inclusive in width by 0.2499" to 0.0344" inclusive in thickness; over 12" inclusive by 0.2499" to 0.0568" inclusive in thickness.

PRODUCTION OF IRON AND STEEL MERCHANT BARS

Years	Total	Years	Total
1929	6,459,896	*1934	2,802,427
1930	4,131,973	*1935	3,699,057
1931	2,440,363	*1936	5,062,948
1932	1,313,896	*1937	5,186,704
1933	2,284,776	*1938	2,327,840

*Includes bolt, nut and rivet, spike and chain, toe calk, horseshoe, finger, staybolt and all other miscellaneous bars which in 1933 and prior years were included in "all other" miscellaneous hot rolled products.

PRODUCTION OF IRON AND STEEL CONCRETE REINFORCEMENT BARS

Years	Rolled from new steel	Rolled from old material	Total
1929	*	*	963,600
1930	682,681	167,470	850,151
1931	500,055	143,578	643,633
1932	275,115	110,490	385,605
1933	294,349	75,924	370,273
1934	383,627	103,377	487,004
1935	405,313	152,047	557,360
1936	820,523	208,040	1,028,563
1937	677,256	167,301	844,557
1938	649,261	134,437	783,698

*Data not available.

PRODUCTION OF HEAVY AND LIGHT STRUCTURAL SHAPES

Years	Heavy shapes	Light shapes	Total	Years	Heavy shapes	Light shapes	Total
1929	4,055,615	722,405	4,778,020	1934	1,131,133	293,907	1,425,040
1930	3,010,847	501,626	3,512,473	1935	1,303,613	446,127	1,749,740
1931	1,768,374	294,484	2,062,858	1936	2,216,319	681,312	2,897,631
1932	782,570	154,658	937,228	1937	2,546,582	730,264	3,276,846
1933	853,914	255,543	1,109,457	1938	1,476,471	383,069	1,859,540

PRODUCTION OF NAILS

Years	Wire nails	Cement coated wire nails (a)	Cut nails and cut spikes
1929	584,868	94,587	23,832
1930	426,849	67,327	20,532
1931	338,507	49,320	14,164
1932	240,811	33,063	12,759
1933	398,513	51,495	15,600
1934	276,634	37,255	15,599
1935	396,068	46,697	17,632
1936	532,142	63,159	23,495
1937	485,115	62,941	21,808
1938	430,339	41,726	17,555

(a) Included in production of wire nails.

PRODUCTION OF SEAMLESS, LAP-WELD, BUTT-WELD, AND ELECTRIC-WELD PIPE AND TUBES IN 1938

SEAMLESS PIPE AND TUBES*

	Standard pipe	Line pipe	Oil country goods	Boiler tubes	Mechanical tubes	Miscellaneous	Total
Hot finished†	49,965	162,923	769,713	49,772	33,970	8,037	1,074,380
Cold drawn	1,752	763	1,317	22,499	38,887	599	65,817
Total	51,717	163,686	771,030	72,271	72,857	8,636	1,140,197

LAP-WELD, BUTT-WELD AND ELECTIC-WELD PIPE AND TUBES*

Lap-weld ¶	140,259	66,854	58,602	10,454	.....	5,731	281,900
Butt-weld ¶	617,650	11,637	568	.....	.....	11,688	641,543
Electric-weld ¶	58,545	15,448	93,837	.....	26,625	45,890	240,345
Total	816,454	93,939	153,007	10,454	26,625	63,309	1,163,788

*Production of black pipe, including stainless steel pipe and black pipe subsequently galvanized, sherardized, or enameled.

†Does not include hot finished tubes subsequently cold drawn.

¶Includes Iron and Steel.

MEN OF INDUSTRY

■ JAMES P. GILL, chief metallurgist, Vanadium-Alloys Steel Co., Latrobe, Pa., has been nominated for president, American Society for Metals, to succeed W. P. Woodside, vice president, Climax Molybdenum Co., Detroit. Mr. Gill is present vice president and had previously served as a trustee.

Oscar E. Harder, assistant director, Battelle Memorial institute, Columbus, O., is the nominee for vice president. Dr. Harder was a trustee several years ago. Dr. Kent R. Van Horn, research metallurgist, Aluminum Co. of America, Cleveland, was nominated for treasurer for two years.

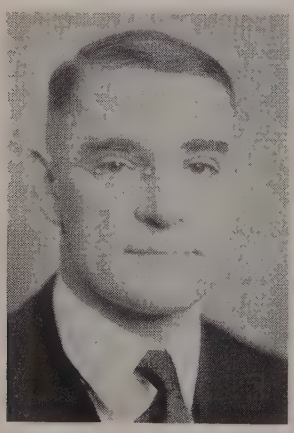
Nominees for trustee for two years are Dr. Marcus A. Grossmann, director of research, Chicago district, Carnegie-Illinois Steel Corp., Chicago, and Herbert J. French, in charge of alloy steel and iron development, International Nickel Co. Inc., New York. These selections were made at a meeting of the nominating committee in Chicago, May 19. Nomination to the offices virtually assures election at the National Metal congress in Chicago, Oct. 23-27.

♦

N. A. Feldman has been appointed office manager and purchasing agent, Claud S. Gordon Co. of Ohio, Cleveland.

♦

Robert A. Neal, formerly assistant to vice president, has been appointed manager, switchgear division, Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa. Mr. Neal has been associated with Westinghouse since 1910, when he was graduated as an electrical engineer from University of New Hampshire. In 1926 he was advanced to sales manager for all switchgear apparatus. He held this position until 1931 when he became manager, central station sales department, later to be named assistant to vice president.



Robert A. Neal

James P. Gill

♦

K. J. T. Ekblaw, the past ten years agricultural engineer, American Zinc institute, Chicago, has been elected president, American Society of Agricultural Engineers.

♦

Robert W. Conder, active in labor negotiations between the Chrysler Corp., Detroit, and its employes, has been named director of labor relations of the corporation.

♦

O. R. Harpole has been appointed district salesman in St. Louis, and Joe Sabourin Jr., in Kansas City, by USL Battery Corp., Niagara Falls, N. Y.

♦

W. H. Gibb, 101 North Thirty-third street, Philadelphia, has been appointed sales representative in Delaware and eastern Pennsylvania by the C. M. Kemp Mfg. Co., Baltimore.

♦

L. B. Genebach, vice president, United Steel & Wire Co., Battle Creek, Mich., has been reappointed a member of the public relations committee, National Association of Manufacturers.

♦

C. C. Carlton, vice president, Motor Wheel Corp., Lansing, Mich., has been re-elected president, Automotive Parts and Equipment Manufacturers' association, his sixth consecutive term.

♦

Hunter Hicks, the past five years vice president, Merchants Steel & Supply Co., scrap iron and steel broker, Chicago, has b... president, succeeding his late E. John Hicks. E. ... has been elected secretar...

♦

Dr. Jesse E. Stareck, ... research at the labo... United Chromium Inc., ... Conn., was recently a... Edward Longstreth me... Franklin institute, Phila... his discovery of electr... plating.

♦

Jack R. Forcheimer, ... Forcheimer & Son, St. ... John F. Malloy, Malloy &... Philadelphia, have be... chairman and vice chair... tively, traffic committe... of Scrap Iron and Steel ... York.

♦

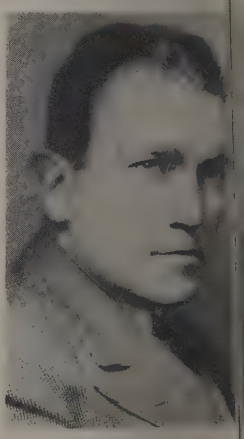
Robert L. Heath, metal... lison Engineering Co., in... has been elected head ... dianapolis chapter, Am... ciety for Metals. Othe... Vice chairman, Daniel ... Monarch Steel Co.; secre... ton B. Jenson, Internat... vester Co.; treasurer, Ax...

♦

Leonard E. Nichols, ... chief welding engineer, ... Electric Welding Machines ... City, Mich., has been na... nical advisor and sales eng... troit district sales divisio... of that division have rec... moved from the Stormfe... building to room 6-255 Ge... tors building.

♦

Karl A. Zollner has been ... sistant sales manager, ... products division, Wickwi... Steel Co. and its subsid... American Wire Fabrics ... Zollner, who has been ... with the advertising depa... the two companies the ... years, will continue to ... advertising and promotio...



Karl A. Zollner

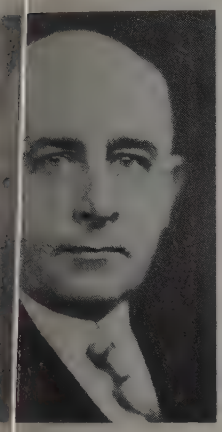
ces at the companies' 500 Fifth avenue, New

♦

chwanhausser, associ- Worthington Pump & orp., Harrison, N. J., ion from Stevens In- hnology in 1915, has a vice president. Mr. r served in a number being appointed as- manager in 1927. In ransferred to the Buf- works manager which w holds. As vice presi- rks manager he will is present responsibili-

♦

Emanuels, 617 West- Life building, Los An- been appointed district



Charles Heggie
lected president, American ouse association, as noted in 22, page 43. Mr. Heggie is Scully Steel Products Co., United States Steel Corp. subsidiary

tive in southern Califor- ndard Tube Co., Detroit. uels was formerly with Steel Corp. on the Pacific

rnjost, 544 Market street, isco, has been named dis- resentative in northern by Standard Tube.

♦

arswell has resigned as and director, Burlington td., Hamilton, Ont., owing ision to reside in Europe. mbaugh has been elected and F. C. O'Brien has been the board of directors. Mr. h has been with the com- e 1922, the past two years al manager, while Mr. joined the company 20 and has been sales man- past two years.

♦

l Leslie Hoover, director gineering experiment sta-

Willard H. Cobb
Who has been named general manager, mechanical goods and general products divisions, United States Rubber Co. Inc., New York, as noted in STEEL, May 15, page 31

tion at Rutgers university, has been named professor and head of the department of electrical engineering, Case School of Applied Science, Cleveland, effective July 1. He succeeds Prof. Henry B. Dates who is retiring with the title of professor emeritus.

♦

Stanley Michaelson, engineer in the mining division of Allis-Chalmers Mfg. Co., Milwaukee, has been transferred to the company's Salt Lake City, Utah, district office where he will serve as sales engineer, specializing in mining and related machinery. Associated with Allis-Chalmers since 1935, Mr. Michaelson at first was in charge of the company's mineral research laboratories, and the past three years has handled a wide variety of mining machinery involving many complete plants.

This corrects the previous notice in STEEL, May 15, page 29, to the effect Mr. Michaelson was made manager of the Salt Lake City district.

♦

W. S. MacNabb, superintendent of industrial relations, Gary works, Carnegie-Illinois Steel Corp., has been appointed assistant division superintendent, open hearths and central mills.

Other changes in personnel at the Gary works are as follows: T. J. Griffin, formerly superintendent of central mills, has been named assistant to division superintendent, open hearths and central mills. T. H. Sanderson will be the new assistant to superintendent, rail mills. He formerly was contact representative, metallurgical division, Chicago office. Stanley J. Brown, previously an inspection foreman, has been named foreman of the finishing and shipping department of the rail mill. Forest J. Smith, assistant superintendent of industrial relations, has become superintendent, succeeding Mr. MacNabb. Walter Bennett, assistant to division superintendent, open hearths and central mills, in charge of personnel matters, will be assistant superintendent of industrial relations. Edgar N. Yost, assistant chief inspector, has been promoted to chief inspector, and J. S. McMahon, who has been stripper and mold yard foreman at No. 3 open hearth, becomes assistant to division superintendent, open hearths and central mills, in charge of personnel matters.

DIED:

■ JAMES E. LEWIS, 66, since 1937 chairman of the board, Harbison-Walker Refractories Co., Pittsburgh, in that city, May 25. He had been in ill health many months. Mr. Lewis also served as president until a few weeks ago. He had been associated with Harbison-Walker about 52 years, advancing to the presidency through both operating and sales capacities. He was a director, American Refractories institute, and at one time served as president of that organization.

♦

William Clifford Stevens, 55, since 1930, vice president in charge of engineering, secretary and a director, Cutler-Hammer Inc., Milwaukee, in that city, May 15. Mr. Stevens joined Cutler-Hammer in 1906 in the engineering department at Milwaukee, following graduation from Cornell university. In 1907 he was transferred to the Pittsburgh sales office, subsequently being made district manager, western division; eastern district manager, and general sales manager. In 1924 he was placed in charge of the development department which position he held six years. Mr. Stevens had a fellowship with the American Institute of Electrical Engineers, and also was a director, Globe Union Inc., Milwaukee.

♦

John J. McHugh, 70, foreman for the American Steel & Wire Co., Cleveland, for 40 years until his retirement, May 13 in that city.

♦

Charles H. Strawbridge, 67, president, Goodman Mfg. Co., maker of mine machinery, Chicago, May 16 in that city. He was a director, Illinois Manufacturers association, and former president, National Metal Trades association, Chicago.

♦

Charles R. Rauth, 58, secretary, treasurer and a director, United States Pipe & Foundry Co., Burlington, N. J., May 16 at his home in Edgewater Park, N. J. He had been with the company since its formation in 1899.

Editorial

The President Asks Questions

■ RECENTLY the President called on the temporary national economic committee to find the reason for economic depression in the United States—to "ascertain why a large part of our vast reservoir of money and savings remains idle in stagnant pools." The President emphasized the need for busy dollars. "Idle dollars profit no one," he said.

"Is it because our economy is leaving an era of rapid expansion and entering an era of steadier growth, calling for relatively less investment in capital goods?" he asked. "Is it because of lag, leak and friction in the operation of investment markets which pervert the normal flow of savings into non-productive enterprise? These are questions for your committee to answer. I know of no more urgent ones in the country today."

The President is right. There are no more important questions confronting the country today than these. The need is for busy dollars. The need is for investment of money on a large scale to provide widespread employment and resuscitate public purchasing power. It generally is the accepted belief that if this basic need were fulfilled, most of our other national problems would become relatively simple.

Theoretical Solutions Failing, Simple Business Methods Offer Way Out

Mystifying is the insistence by the present administration that the solution of our economic problems must be entrusted only to those who believe this basic problem can be solved only by governmental controls. The above questions, for example, are addressed, not to authorities on business economics but to a government group whose knowledge of business economics is the result of a theoretical or political approach. This is said without any aspersion on members of the temporary national economic committee, who have given indications they are genuinely concerned with the solution of the country's economic ills.

That the administration has not been acting on advice from the right sources clearly is reflected by the extent to which government spending has piled up a huge mounting, national debt without curtailing unemployment or otherwise improving the plane of life in this country. Is it not time, therefore, to abandon the approach that hitherto has been made on our economic problems and present some of these questions to business executives. Most of these men believe that the obstacles to recovery could be removed almost overnight, and by rather simple means. They believe all that is needed is government policies aimed at encouraging profits on industrial investments.

Key to Recovery Problems Lies in Co-operation with Private Industry

STEEL believes that President Roosevelt quickly would get the key to the recovery problem if he would call into joint session a responsible group of business and industrial leaders and address them as follows:

"Gentlemen: Approximately 10,000,000 employable men and women today are without jobs. This is the basic fact underlying our reduced public purchasing power, the relief problem, the farmer problem and all our other present-day economic problems. I want private industry to put all these people to work at desirable wages. I want you manufacturers to report to me within two weeks what assistance you require from the government that will enable you to put 1,000,000 of these unemployed back at work by the end of this year and that will enable you to put them all back at work within two years. Every legitimate assistance that you require toward this end will be yours."

BUSINESS TREND

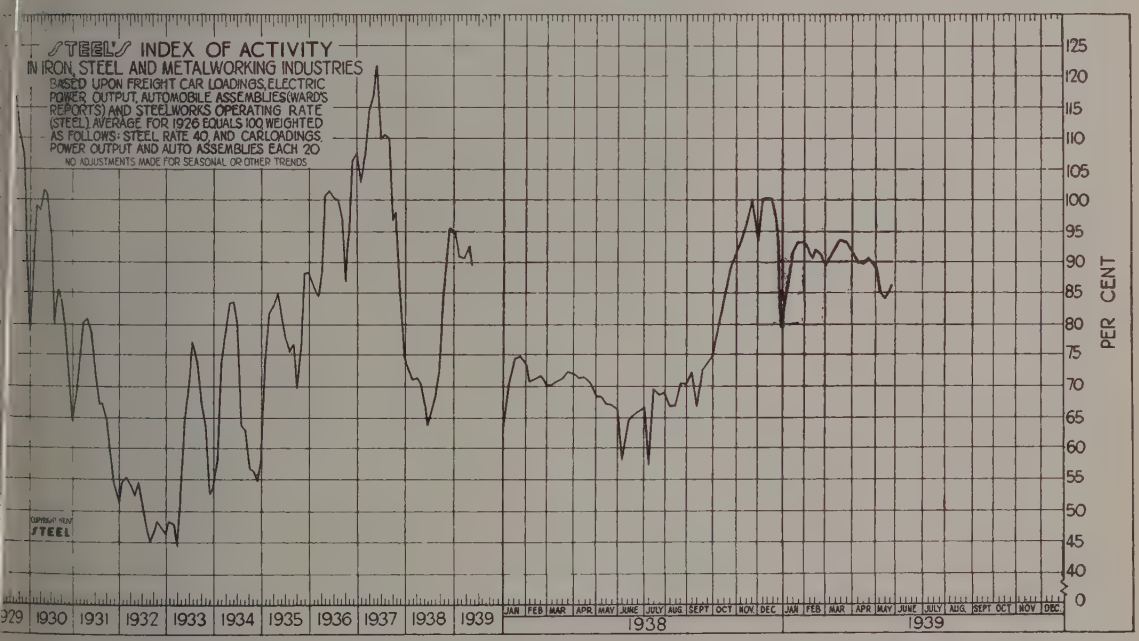
ity Index Reverses ward Tendency

CTING encouraging gains in revenue freight and automobile production, STEEL's index of vanced 2.4 points to 86.6 for the week ended This recent upturn recorded by the index re- downward tendency, with but one exception, eding eight weeks. Despite the fact industrial as receded substantially since the closing 1938, it remains well above the level recorded ne last year.

ing operations eased 1.5 points to 45.5 per cent in the week ended May 20, thus continuing the downward movement which got underway in the week ended March 28. Excluding the holiday week ended Dec. 31, the recent decline in the national steel rate forced this industrial indicator to the lowest level since the week ended Sept. 10, 1938. However a reversal of the downward movement in steelworks operations is anticipated for the week ended May 27 and there are sound indications that still further gains will be recorded through the remainder of this quarter.

Automobile production registered an encouraging gain to 80,145 units in the week ended May 20. This gain in assemblies increased the spread over the corresponding week last year to 33,335 units. While in some instances the improvement in auto output reflects a better volume of sales, the rise is considered only temporary.

Reflecting the resumption of soft coal shipments, rev-


STEEL'S INDEX OF ACTIVITY
IN IRON, STEEL AND METALWORKING INDUSTRIES
BASED UPON FREIGHT CAR LOADINGS, ELECTRIC POWER OUTPUT, AUTOMOBILE ASSEMBLIES (WARD'S REPORTS) AND STEELWORKS OPERATING RATE (STEEL) AVERAGE FOR 1926 EQUALS 100 WEIGHTED AS FOLLOWS: STEEL RATE 40 AND CARLOADINGS, POWER OUTPUT AND AUTO ASSEMBLIES EACH 20
NO ADJUSTMENTS MADE FOR SEASONAL OR OTHER TRENDS
COPYRIGHT 1939 BY STEEL
PER CENT
125 120 115 110 105 100 95 90 85 80 75 70 65 60 55 50 45 40 0
1929 1930 1931 1932 1933 1934 1935 1936 1937 1938 1939
JAN FEB MAR APR MAY JUNE JULY AUG SEPT OCT NOV DEC
1938
1939

STEEL'S index of activity gained 2.4 points to 86.6 per cent in the week ended May 20:

ing	1939	1938	Mo. Data	1939	1938	1937	1936	1935	1934	1933	1932	1931	1930	1929
.....	91.5	70.1	Jan.....	91.1	73.3	102.9	85.9	74.2	58.8	48.6	54.6	69.1	87.6	104.1
.....	92.7	70.8	Feb.....	90.8	71.1	106.8	84.3	82.0	73.9	48.2	55.3	75.5	99.2	111.2
.....	93.3	71.3	March.....	92.6	71.2	114.4	88.7	83.1	78.9	44.5	54.2	80.4	98.6	114.0
.....	93.2	72.4	April.....	89.8	70.8	116.6	100.8	85.0	83.6	52.4	52.8	81.0	101.7	122.5
.....	92.2	72.0	May.....	....	67.4	121.7	101.8	81.8	83.7	63.5	54.8	78.6	101.2	122.9
.....	90.0	71.3	June	....	63.4	109.9	100.3	77.4	80.6	70.3	51.4	72.1	95.8	120.3
.....	89.7	71.4	July.....	....	66.2	110.4	100.1	75.3	63.7	77.1	47.1	67.3	79.9	115.2
...	90.4	70.8	Aug.....	....	68.7	110.0	97.1	76.7	63.0	74.1	45.0	67.4	85.4	116.9
...	89.2	68.4	Sept.....	....	72.5	96.8	86.7	69.7	56.9	68.0	46.5	64.3	83.7	110.8
.....	85.1	68.5	Oct.....	....	83.6	98.1	94.8	77.0	56.4	63.1	48.4	59.2	78.8	107.1
..	84.2	67.2	Nov.....	....	95.9	84.1	106.4	88.1	54.9	52.8	47.5	54.4	71.0	92.2
....	86.6	67.1	Dec.....	....	95.1	74.7	107.6	88.2	58.9	54.0	46.2	51.3	64.3	78.3

enue freight carloadings increased contra-seasonally to 615,966 in the week ended May 20. This is the highest volume of freight traffic since the week ended Dec. 10, when loadings totaled 619,340. A year ago railroad car loadings of 545,808 were well below the current level. Electric power consumption remained substantially unchanged during the week ended May 20. Power output in that week of 2,170,496,000 kilowatt-hours compares with 2,170,750,000 in the preceding week.

Construction contracts awarded during April rose to an eight year peak, according to F. W. Dodge Corp., New York. Total construction in April, valued at $330,030,000, represents a gain of 49 per cent over the April, 1938, total and an increase of 10 per cent over the record for last March. A small decline in residential and non-residential building in April was more than offset by substantial gains in public works and utilities construction. Residential construction the first four months this year was considerably ahead of last year. The number of new dwelling units was 83 per cent greater than a year ago, and the dollar value was 73 per cent higher. Value of manufacturing building c in the first four months this year increased or 22 per cent over the corresponding 1938

The National Machine Tool Builders' assoc dex of orders declined in April to 155.6 fro corded during March. This represents the back registered by the index since last Despite the decline in the monthly index for three month moving average index recorde increase to 169.4 from 167.8 reported in M falling off in orders during April is a norma development and reflected declines in both and foreign business.

Where Business Stands

Monthly Averages, 1938=100

	Apr., 1939	Mar., 1939	Apr., 1938
Steel Ingot Output	132.1	137.8	82.0
Pig Iron Output	132.9	149.1	89.4
Freight Movement	97.1	104.1	92.6
Automobile Production	159.1	172.6	107.6
Building Construction	123.9	112.9	83.3
Wholesale Prices	*96.7	97.6	100.1

*Preliminary.

Industrial Weather

TREND: *Downward*

The Barometer of Business

Industrial Indicators

	April, 1939	March, 1939	April, 1938
Pig iron output (daily average, tons)	68,793	77,201	46,267
Machine tool index (3 mo. ave.)	169.4	167.8	91.0
Foundry equipment new order index	146.0	146.6	79.3
Finished steel shipments	701,459	767,910	501,972
Ingot output (daily average, tons)	119,479	124,625	74,045
Nat'l Ind. Conf. board inventory indices:†			
Raw materials	99.0	100.6	114.4
Semifinished goods	113.6	112.3	120.6
Finished goods	110.1	109.5	116.5
Dodge building awards in 37 states (valuation)	$330,030,000	$300,661,000	$222,016,000
Automotive output	354,263	389,489	238,133
Coal output (tons)	10,747,000	35,290,000	22,380,000
Business failures; number	1,140	1,123	1,172
Business failures; liabilities	$17,492,000	$17,915,000	$20,106,000
Nat'l Ind. Conf. board (25 industries, factory):			
Av. wkly. hrs. per worker	†36.9	36.8	33.3
Av. weekly earnings	†$26.25	$26.11	$23.63
Cement production (bbls.)		8,171,000	7,983,000
Cotton consumption (bales)	546,702	649,237	413,169
Car loadings (weekly av.)	557,002	597,603	531,604

†March, February and March, respectively.

Foreign Trade

	April, 1939	March, 1939	April, 1938
Exports		$268,364,000	$274,482,000
Imports		$190,416,000	$159,907,000
Gold exports		$52,000	$13,000
Gold imports		$365,436,000	$215,825,000

Financial Indicators

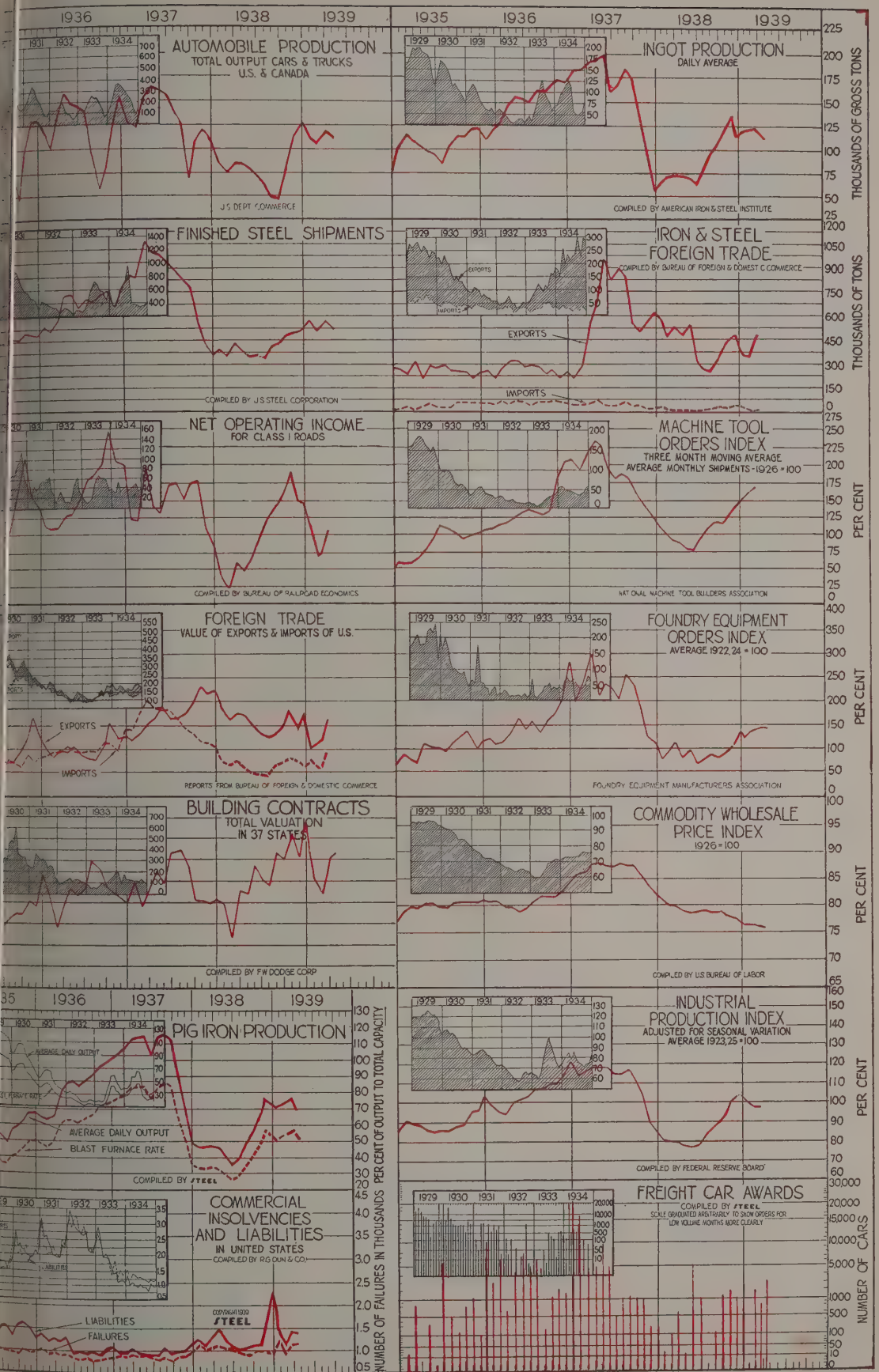
	April, 1939	March, 1939
25 Industrial stocks	$161.51	$178.01
25 Rail stocks	$19.41	$23.18
40 Bonds	$70.16	$72.72
Bank clear'gs (000 omitted)	†$24,995,000	$19,711,000
Commercial paper rate, New York (per cent)	½–¾	½–¾
*Com'l loans (000 omitted)	$8,100,000	$8,191,000
Federal Reserve ratio (per cent)	85.1	84.7
Capital flotations:		
New capital	$142,621,000	$162,258,000
Refunding	$213,320,000	$77,658,000
Federal gross debt (millions of dollars)	$40,064	$39 955
Railroad earnings	†$34,316,888	$18,590,734
Stock sales, New York stock exchange	20,247,438	24,565,054
Bond sales, par value	$122,651,425	$185,855,800

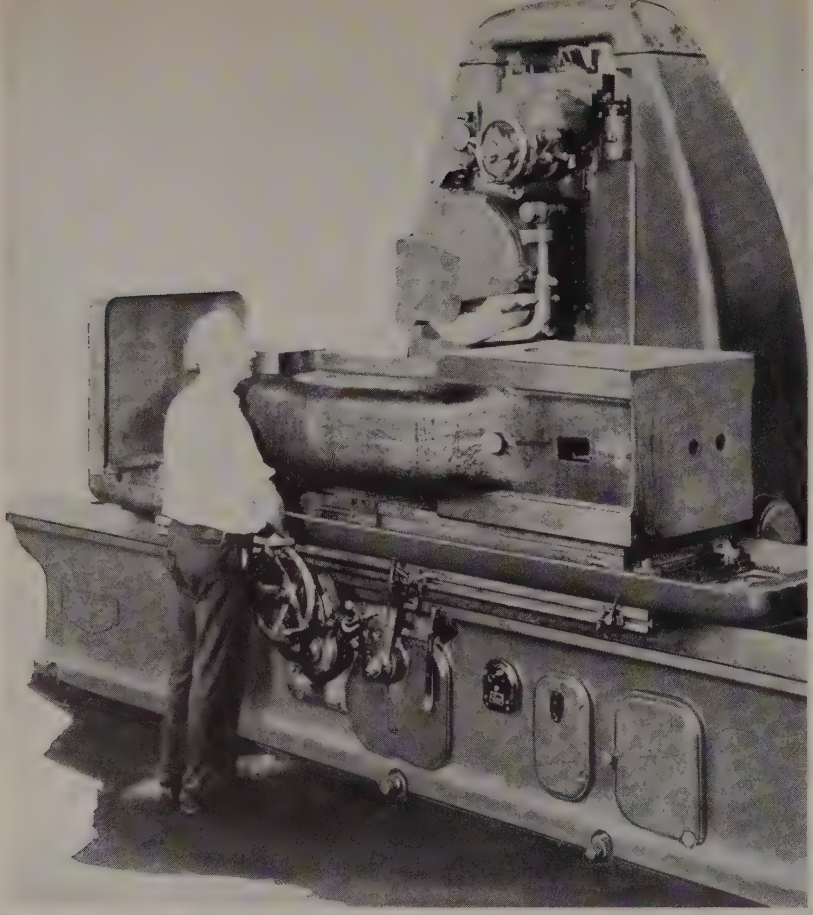
*Leading member banks Federal Reserve System.
†March, February and March, respectively.

Commodity Prices

	April, 1939	March, 1939
STEEL'S composite average of 25 iron and steel prices	$36.34	$36.40
U. S. Bureau of Labor's index	*76.0	76.7
Wheat, cash (bushel)	$0.90	$0.87
Corn, cash (bushel)	$0.64	$0.63

*Preliminary.


AUTOMOBILE PRODUCTION
TOTAL OUTPUT CARS & TRUCKS
U.S. & CANADA
U.S. DEPT. COMMERCE
INGOT PRODUCTION
DAILY AVERAGE
COMPILED BY AMERICAN IRON & STEEL INSTITUTE
THOUSANDS OF GROSS TONS
FINISHED STEEL SHIPMENTS
COMPILED BY U.S. STEEL CORPORATION
IRON & STEEL FOREIGN TRADE
COMPILED BY BUREAU OF FOREIGN & DOMEST C COMMERCE
EXPORTS
IMPORTS
THOUSANDS OF TONS
NET OPERATING INCOME
FOR CLASS I ROADS
COMPILED BY BUREAU OF RAILROAD ECONOMICS
MACHINE TOOL ORDERS INDEX
THREE MONTH MOVING AVERAGE
AVERAGE MONTHLY SHIPMENTS - 1926 = 100
NATIONAL MACHINE TOOL BUILDERS ASSOCIATION
PER CENT
FOREIGN TRADE
VALUE OF EXPORTS & IMPORTS OF U.S.
EXPORTS
IMPORTS
REPORTS FROM BUREAU OF FOREIGN & DOMESTIC COMMERCE
FOUNDRY EQUIPMENT ORDERS INDEX
AVERAGE 1922-24 = 100
FOUNDRY EQUIPMENT MANUFACTURERS ASSOCIATION
BUILDING CONTRACTS
TOTAL VALUATION
IN 37 STATES
COMPILED BY F.W. DODGE CORP
COMMODITY WHOLESALE PRICE INDEX
1926 = 100
COMPILED BY U.S. BUREAU OF LABOR
PIG IRON PRODUCTION
AVERAGE DAILY OUTPUT
BLAST FURNACE RATE
COMPILED BY STEEL
PER CENT OF OUTPUT TO TOTAL CAPACITY
INDUSTRIAL PRODUCTION INDEX
ADJUSTED FOR SEASONAL VARIATION
AVERAGE 1923-25 = 100
COMPILED BY FEDERAL RESERVE BOARD
COMMERCIAL INSOLVENCIES AND LIABILITIES
IN UNITED STATES
COMPILED BY R.G. DUN & CO.
LIABILITIES
FAILURES
COPYRIGHT 1939 STEEL
NUMBER OF FAILURES IN THOUSANDS
FREIGHT CAR AWARDS
COMPILED BY STEEL
SCALE GRADUATED ARITHMETICALLY TO SHOW ORDERS FOR LOW VOLUME MONTHS MORE CLEARLY
NUMBER OF CARS



Bearing surfaces of this 3-ton heading slide are being precision ground to final finish on Mattison 24 x 96-inch surface grinder. Twenty-two-inch diameter wheel removes approximately .015-inch of metal. Clearance between wheel and table is 30 inches

Sur

By GUY HUBE
Machine Tool E

■ When surface grinding is mentioned, the immediate reaction is apt to be either that precision work of small size, such as vertical forming tools, or relatively coarse work of large size, gear guards for instance, are what the speaker has in mind. Unless one lately has been getting around among leading machinery builders, or has been at the "receiving end" of vigorous sales efforts now being made by some of the machine tool builders, it may be somewhat difficult to conceive of surface grinding as a fast, economical and at the same time exceedingly accurate method for roughing and finishing machinery parts running up to several tons in weight.

Method Is Recognized

Nevertheless, it is true that surface grinding as a recognized method of heavy machining, definitely has arrived. Any production man who fails to recognize this is not keeping up with the times as far as machine shop practice is concerned.

Several factors have contributed to the development of the large, high powered precision surface grinder as a production tool on large work. I personally am inclined to place first, the imagination and courage of machine tool builders who dared to break with traditions which had bound the surface grinding process to the tool room. To do this they had—among other things—to overcome the widely prevalent but false idea that cast iron surfaces, when finished by grinding become charged with abrasive particles and forever after act as laps to any other surface with which they came into sliding contact.

Second, I would place manufacturers of grinding wheels. Through their work on abrasives, bonding and wheel design there have been developed many types of heavy duty wheels which are free cutting, safe and surprisingly long lived under heavy duty conditions. Without them the best heavy duty surface grinder would be practically useless on production work.

Third, I would mention the electrical industry because it has cooperated with the machine tool industry to make possible the powerful, smooth running direct motor driven wheel spindles which play such an important role in the performance of many modern large surface grinders.

To some who are without practical experience it may appear that

removal of metal by grin
not demand in a machi
degree of power and ri
monly associated for in
heavy duty planning and
milling. As one non-te
server of a grinding o
the 1935 National Ma
Show expressed it,". . .
apparently brushes awa
metal as a revolving br
away dust." As a mat
nothing could be furthe
truth than that.

Success in heavy dut
came only when machine
awoke to the fact that
perhaps than in any oth
machine—they must use
well placed metal in be
and slides to insure rigi
kill any unavoidable cha
bration; that they mu
wheel heads with gener
provisions as well as for
vibrationless operation;
they must get a stron
"push" behind the work

Power and Rigidity

In other words, the app
"brushing the metal away"
an illusion. What actuall
is that the metal is cut a
form of chips (even thoug
minute chips) by what a
a powerful, ultrahigh sp
cutter having a tremendou
of very sharp and extre
cutting teeth. For this rea
cessful heavy duty surface
insofar as power and rig
concerned—is in the sam
high production bed-type
machine or a modern
planer. This is borne ou
illustrations which accom
article.

Perhaps the most effecti
demonstrate the penetratio
cision surface grinding
field of heavy machining
successful examples. Two

inding Has Arrived As a Method of Heavy Machining

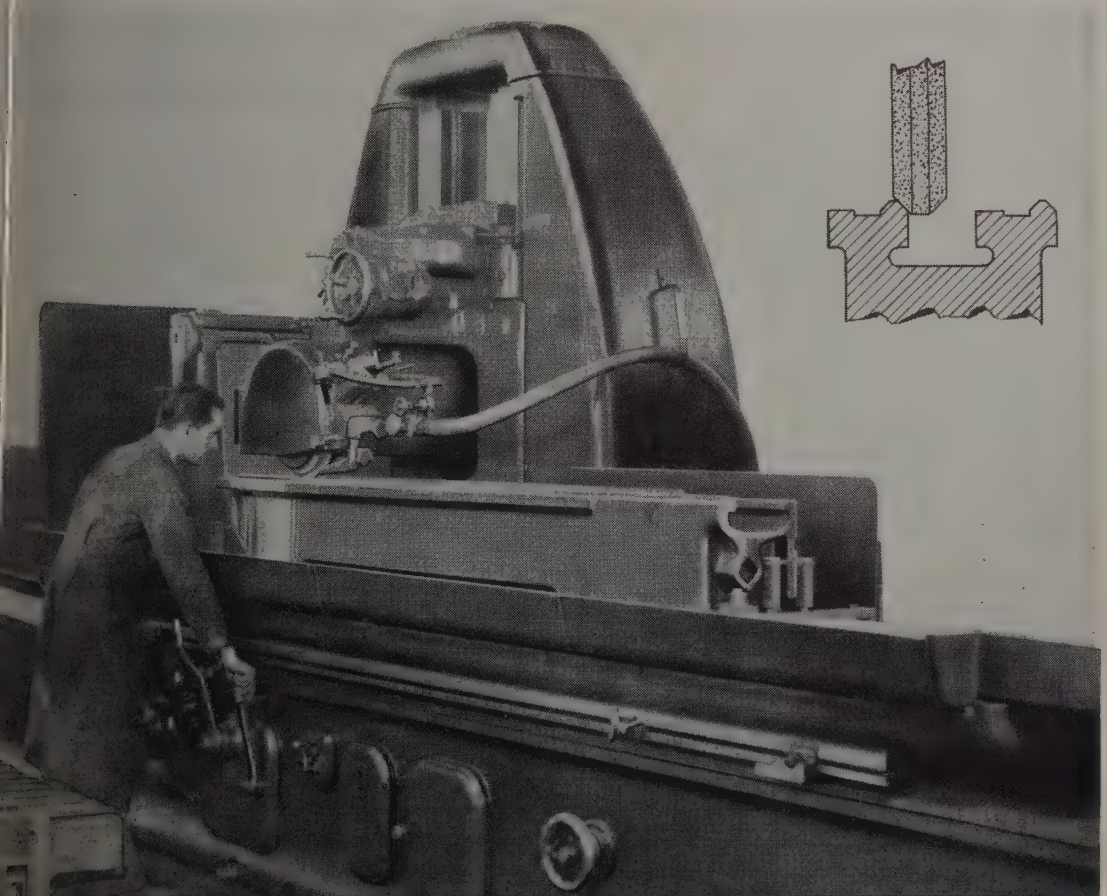
with. The part shown the upper left hand cut or a powerful heading his massive casting . Formerly it required hand scraping to give ing surfaces and their equired accuracy and igh the use of a high cision surface grinder, now performed in 6 no scraping required. nts 62½ per cent sav- ng time.

t the lower righthand side of this spread is a good illustration of the fact that "machine tools are the machines which make machines—including themselves." Here we see a large precision grinding machine finishing the flame-hardened ways of a lathe bed. Both flats and V-surfaces are smoothly finished to extremely close limits at this setup—a special truing device being mounted on the wheel slide to permit dressing both sides of the wheel to the exact V-angles. In this case, comparisons are hardly possible because the hardness of the bed surfaces makes this the only practical finishing method.

In another case, not illustrated, a cast iron slide used in a broaching machine has five plane surfaces which must be finished exactly parallel and extremely smooth. When machined and hand scraped it required between 12 and 14 hours to finish one of the slides. This was cut to 1½ hours floor to floor time per piece through use of a surface grinder equipped with a 12-inch x 48-inch magnetic chuck.

If space permitted, numerous other examples could be mentioned, where time has been cut anywhere from 50 to 80 per cent, on parts of many materials and shapes.

and V-ways of flame-hardened lathe bed—high powered precision er in this case having 24 x 144-inch table and clearing 30 inches under ial device mounted on wheel head dresses wheel to exact angles



One of the continuous presses forming specially shaped pieces from carbide powder

New Plant for Cement

Impressive from standpoint of ample roo and air conditioning, new plant embodie methods of making cemented carbide pr It combines facilities at three former lo

■ ON June 1, Carboloy Co. Inc. will formally open its plant and general offices in Detroit for the manufacture of cemented carbide products. This new plant, largest cemented carbide plant in the United States, embraces a total area of 121,750 square feet. All manufacturing facilities formerly divided among Carboloy plants in Cleveland, Detroit and Stamford, Conn., are combined in this new location.

Designed throughout for the quantity production of cemented carbides, the unusually extensive facilities of the plant are indicative of the anticipated trend of cemented carbide use. Equipment now installed and planned for the immediate future is said to be capable of producing approximately ten times the present amount of Carboloy currently consumed by industry. Supplementary reserve space provides for expansion considerably beyond this known potential capacity.

The plant is located on a 40-acre site on East 8-Mile road, just beyond the city limits of Detroit. A two-story administration building, with an area of 35,556 square all general office depart as sales, engineering, dr chasing, accounting, etc. ture is of reinforced co proof construction, com conditioned, with acous in halls and offices.

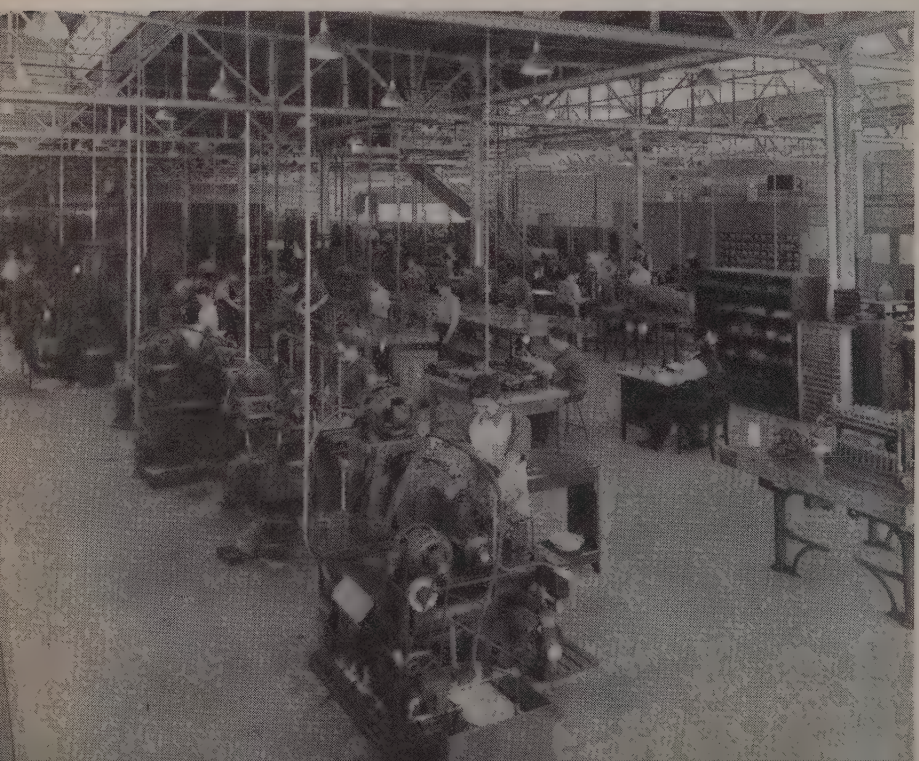
Of particular interest ment executives are th lighting facilities provi building. Departing som conventional lighting m illumination emanates from ceiling coffers 4 by 15 inches deep. Th from 25 to 40 foot-can working plane.

A distinctive lighting is achieved in the lobby room through the use fluorescent mazda tubes.

Even greater light in vided in the plant itself partments having up t candles at the work plant, connected with t the administration buil monitor-type, one story, steel and brick frame str ering an area of 88,197 s It contains complete facili manufacture of Carboloy raw materials through ished tools, dies and wea parts. Employment at around 450.

Research Laborato

To control production, for purposes of product de a completely equipped



Die, grinding and milling s all-welded steel buildin

rbide

Manufacture

Night view of the entrance to the new $750,000 Carboloy general offices and plant in Detroit

is provided. This pro- umerous functions such counts of the powdered magnifications as high neters, microscopic struc- es of hardened Carboloy ical analyses, hardness, d transverse rupture sts, special process and development.

ortance of these labora- parent from the fact that ely 12 tests are conduct- us stages of production processing of each new Carboloy. Maintenance le file in which 500,000 he material, permanently or recheck purposes, has aulated to date, indicates al precautions taken to processing.

er-Metal Department

der-metal department, or om," as it is called, is rough air locks, installed uniform operation of the ning system which close- atmospheric conditions in n. Constant temperature es Fahr.) and humidity per cent) are maintained accurate weighing and of the powdered metals, as some of the materials scopic.

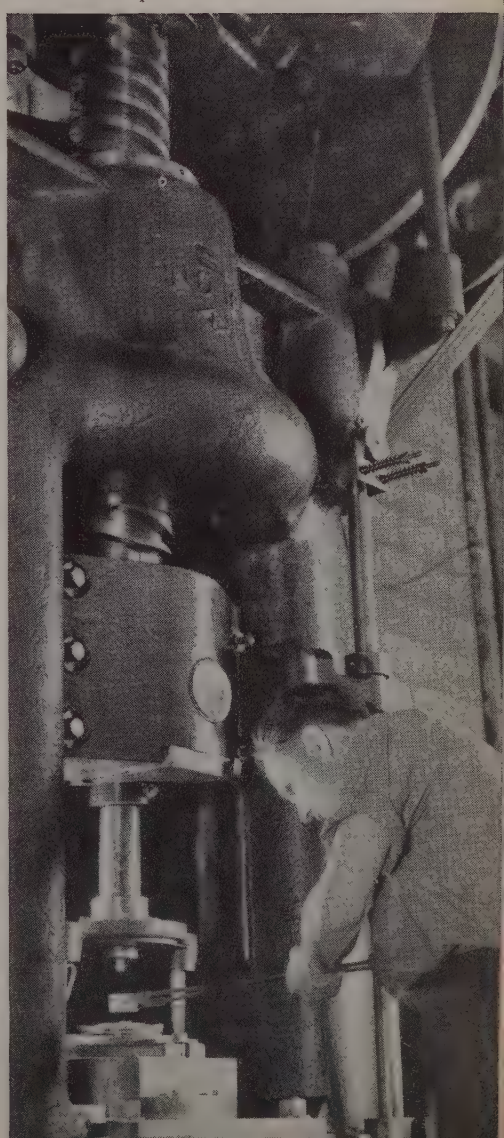
cleanliness also is essen- vent contamination of the metals. Equipment in this nt includes ball mills, sifting and mixing units. ntly introduced, 100-watt lewitt fluorescent tubes ecially for production pre- cision operations, are used to illuminate this department. These provide 40 to 50 foot-candles at the working plane, and because of their relative "coldness" have little effect on room temperatures.

Metal Presses

After the initial powdered metal processing, the powdered metals are received in the press room, which is in a connecting wing of the "metal room."

Two 300-ton presses provide for the production of ingots with maximum rectangular dimensions: Length 18 inches, width 2 inches, depth 1½ inches. Two supplementary continuous presses forecast the unusual quantity production economies that will become possible as standardization of grades, shapes, and sizes progresses. These presses —with a capacity of several hundred pieces per hour—press individual pieces requiring no additional forming operations. Storage bins in this department have a capacity of 50,000,000 grams of raw and processed cemented carbide powders.

Quantity production on all operations requiring a heating cycle is provided for by the installation of 18 furnaces for reduction, carburizing, semi-sintering, sintering and brazing processes. Supplementing these,



Hot forging steel casing around the Carboloy die nib in a wire drawing die

A "boat" of pressed Ca... entering the electric furn... semisintering proc...

several additional furnaces are maintained in other departments for brazing of tools and hot forging of die cases. Quantity handling is amply provided for in many of the furnaces through such features as stoking units for semicontinuous operations, controlled heating and cooling cycles, etc.

Control panels adjoining the furnaces contain temperature recording control instruments, and individual hydrogen control meters for each furnace.

Hydrogen Facilities

Hydrogen is used for all processes requiring a nonoxidizing atmosphere in the processing furnaces. Indicative of the precautions taken to maintain the desired standard of quality and uniformity, is the installation of special equipment to produce hydrogen with a high degree of purification and dryness. Two generating units with 40 cells have a total capacity of 1250 cubic feet per hour. Storage is provided in a 40-foot spherical tank of Hortonsphere which can hold approximately 100,000 cubic feet at 15 pounds pressure.

Milling machines, grinders, lathes, cut-off equipment and specially designed radius machines, shaped die forming equipment and the like are

employed in this departm... the rough semisintered ... special blanks into th... sired. A wide variety ... ranging from extremely ... cate parts to large die ... inches in diameter are ... shaped and sized close ... ished dimensions.

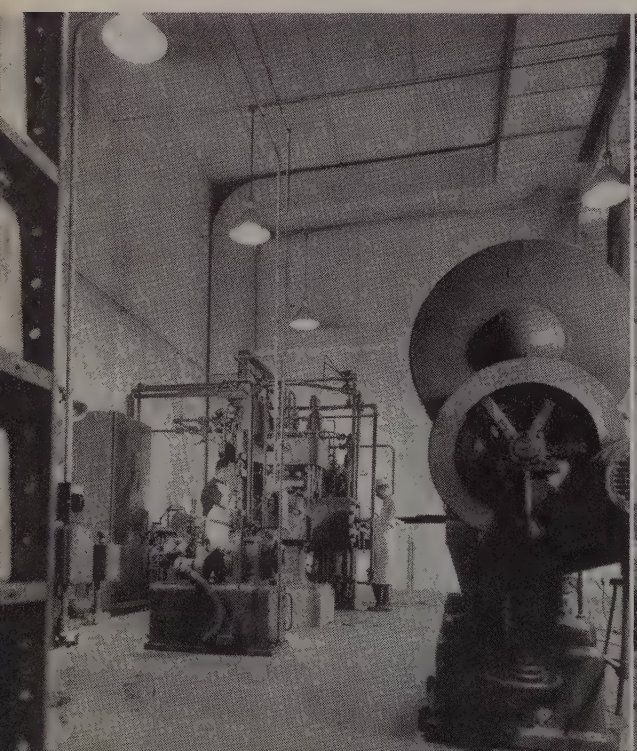
Milling Departm...

While the Carboloy bl... ing processed, the steel ... which it will be brazed is ... pared in the milling d... Here, stock is cut to len... cessed to accommodate t... insert. Multiple spindle ... chines, hydromatic mi... chines, universal backing ... screw machines, shapers ... equipment provide ampl... for both quantity produ... special production orders.

Batteries of hydrauli... grinders, universal intern...

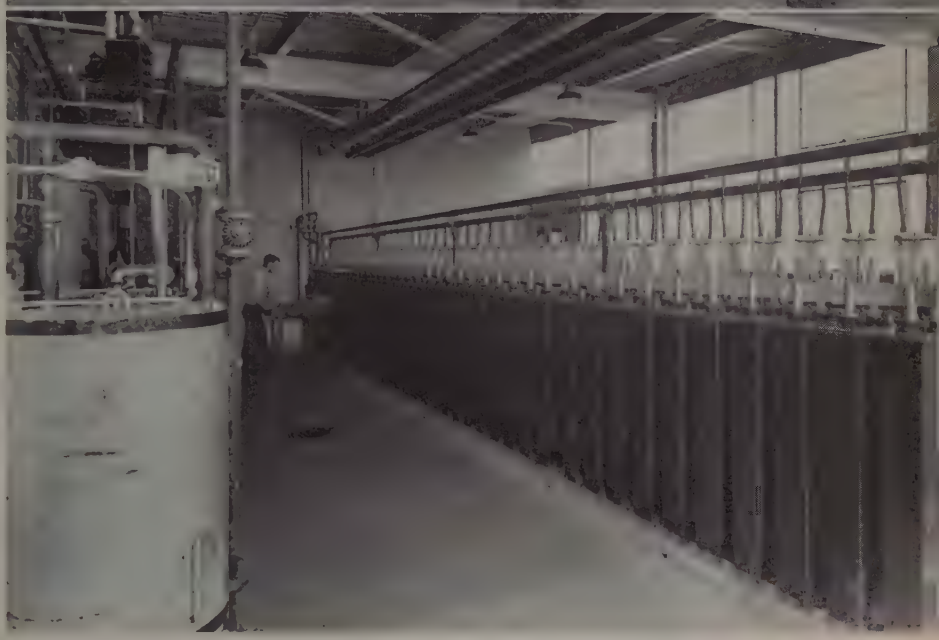
Furnace room (right) equi... battery of 18 electric furno... duction, carbonizing, se... sintering and brazing proc... cial overhead air filter pre... tamination of powdered ...

Two 300-ton presses (left) wi... of several million grams o... monthly, provide for the pr... ingots pressed from powde... Two supplementary, continu... —with capacity of severa... pieces per hour — press ... pieces requiring no addition... operations



nent (top) where steel rs are prepared to ac- Carboloy insert prior razing operation

ment for the production ncludes two generating lls, and a total capacity ubic feet per hour



's, special cutter grind- lapping machines, etc., ols as they come from epartment and perform ding operations neces- ce a finished tool ready lerances as close as e often required on this

t in the manufacturing boloy wire, bar and re segregated from the f tools and other prod- ions arranged for quan- on in this department aration of casing to re- bide nib, rough drilling, finishing of round hole ate facilities are also or sectional and shaped ure. New, specially de- inery is now installed lly automatic operation ction of shaped dies.

lar interest are the facil- forging the die casings

turn to Page 66)

ace grinding a tool shank to milling the recess in tool tip will be brazed

Ingot Mold Insulatio

New insulation of ceramic-coated cork reduc piping in killed steel ingots, permits repouri eliminates carbon pickup and entrapping metallic materials, gives higher yield per t and per ingot, and affords better regulation ingot size

By **FRED M. RITTS**
High Temperature Div.
Armstrong Cork Co.
Lancaster, Pa.

■ A NEW type of ingot mold insulation is attracting considerable attention. It consists of small pieces of cork, granular in form and coated with a ceramic material. The insulation weighs about 25 pounds per cubic foot. Usually the top of the mold is covered with about 4 inches of the material.

One of the most important advantages accompanying use of this material is a reduction in piping in killed steel ingots. Referring to the accompanying drawing, the two sketches show the type of piping obtained with ordinary hot top molds using coke breeze as insulation and the same type of mold using the new insulation developed by Armstrong Cork Co., Lancaster, Pa.

A number of tests in various plants show significant savings accompanying the use of this material. For instance, on a 9000-pound ingot of killed steel, 2 inches of this insulation kept the ingot molten for a total of 65 minutes as compared to 12 minutes when sand was used.

Good Rate of Feeding

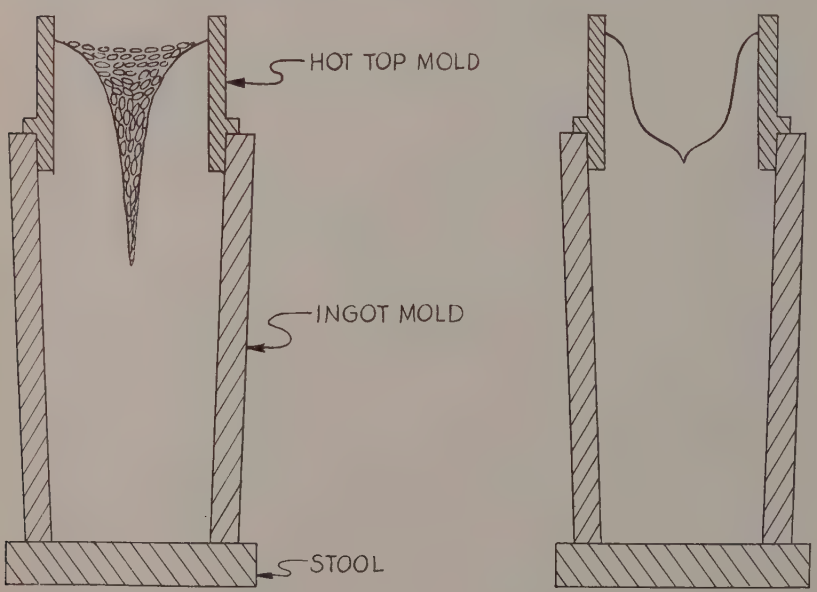
In making this test, the ingot was found to have solidified out only about 1 inch from the hot top edge at the end of the first half-hour. At the end of 45 minutes, solidification had progressed to about 3 inches from the edge. After cooling for 65 minutes, solidification had progressed to about 5 inches from the edge. Center of ingot was still molten and a stick could be pushed easily through the insulation. At the end of 65 minutes, the test ingot had 3½ inches while reg appeared substantially poured. This indicates of feeding for the new

One of the most im vantages of the new that it permits repour are times when it is n use more than one ladle metal to complete the in quires about 45 minutes got approximating 2 t sufficiently to permit sufficient hot metal to for piping. It requires 30 minutes to pour a 10 which means that a cert of hot metal or a new must be retained to co pouring. Usual materia top of the ingot form a c the top very shortly afte pouring. This makes pouring or repouring This is because the insul is usually so low that ingot may bridge over as soon as 20 minutes af itial pouring.

Piping is Reduce

By using this new insu terial in sufficient amou a layer 4 to 6 inches de on top of the newly po the top remains fluid fo of at least 1 hour and 15 as small as a 4000-po This, of course, results i piping as illustrated in a ing diagrams and also amount of metal in the

(*Please turn to Page*



These sketches show comp duction in piping in ordin steel ingots. At left, coke b used. At right, the new cer cork insulation was em

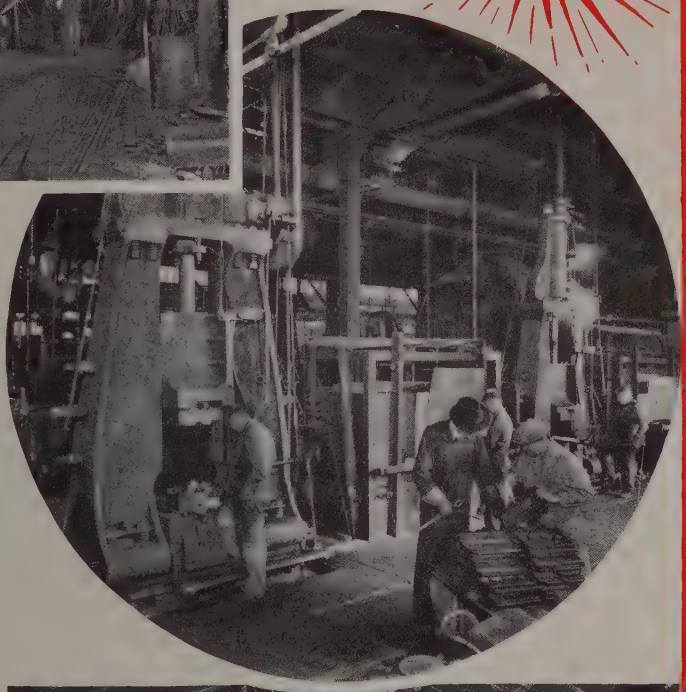
FORGINGS

HAMMER

DROP

UPSET

to your specifications!



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Cecil H. Bacon, Seattle, Wash.

Welding Fittings

New fittings cut time and metal required to mo the weld. Pipe is quickly centered. Integ reinforcements give increased strength. Wa ing and remachining are eliminated. Soc fittings, use of centering lines aid in lining

By E. HALL TAYLOR
Vice President
Taylor Forge & Pipe Works
Chicago

■ NEW DEVELOPMENTS in welding fittings have come so gradually that most users are not aware of type changes and improvements now available.

The new "Proposed Standard for Welding Fittings," available from American Society of Mechanical Engineers, New York, covers overall dimensions of fittings in elbow, tees, caps, reducers, return bends, and lap joint stub ends. It also covers the pressure ratings, size, marking, material, metal thickness, tolerance and the welding bevel.

With these standards established, engineering departments now can lay out pipe lines with the knowledge that the fittings of various manufacturers are being changed to conform to the new proposed dimensions.

Angle of bevel for butt welding has finally been agreed upon as 37½ degrees. This bevel has been in use in pipe line work for some time. As fast as changes can be made, the 37½ degree bevel will be adopted on welding fittings. The narrow groove formed by this bevel requires less weld metal, thus saving time and material.

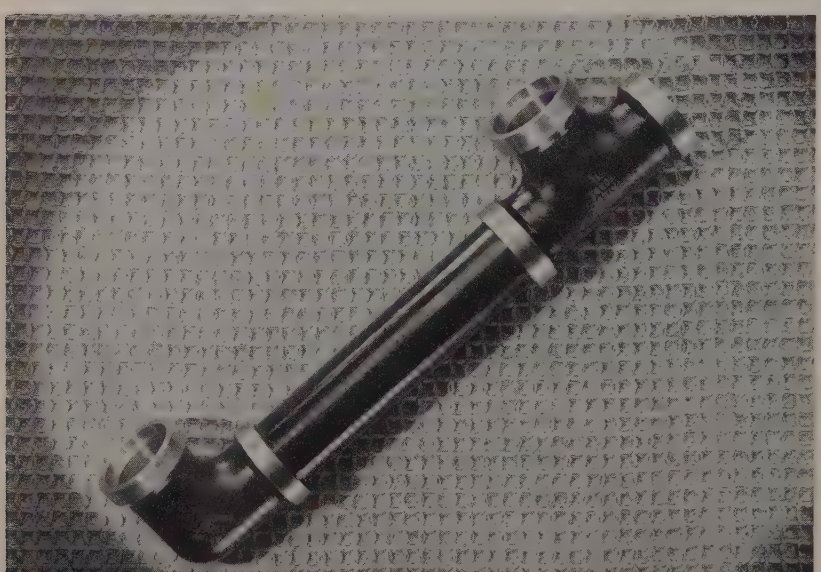
Welding small diameter pipe always has presented a problem in lining up and in welding. Wall thickness of pipe, 2 inches diameter and under, is quite thin. When bevelled for welding, the narrow bevel is not easy to line up with the pipe, and welding the thin wall requires care to avoid burning through. The development of socket welding fittings several years ago solved these difficulties, but it has only been recently that they have come into widespread use. It is easy to center pipe in a socket fitting as the pipe slips into the end of the fitting for a short distance. A fillet weld is made between fitting and pipe. There is no danger through as this weld is side of the pipe. In ma destruction, the pipe failed before the fitting tress.

New developments methods have steadily weld quality and have i speed of welding. This much to further the ins welded piping systems. to say that the quality today is such that the w is equal to or stronger th itself. The same staten hold true of welded fittin to give a full strengths throughout. To accompli newer fittings are rei points of greatest strain destruction have been co many fittings in which th pipe has burst before showing how well this has strengthened the fitti deformation.

Branch Connections In

Reinforcing those bran tions attached to pipe b has assumed such impor a committee has been form American Standards Asso study this. Extensive being run to determine the strains are and what ment is necessary when cut in a pipe for a branc tion. It is not generally how much a pipe is weake a hole is cut in it for a br let. Modern welding tee signed with reinforcemen the branch so strength

Abstracted from paper presented at International Acetylene association's convention in Houston, Tex., March 8-10.



Socket fittings make it easy the pipe in the fitting, prever through the thin wall of pi a fillet weld is made on outsi

y equal to yield point thus eliminating any the outlet connection.

pidly growing develop- of welding fittings is of expansion loops by pansion loops made of gs are flexible and can de to fit almost every ondition and require- g pipe to length and y means of welding ll that is required to As expansion is taken rying the piping length, rves as a flexible pivot e expansion is absorbed g of the pipe. This is expensive and safe way of expansion in a pipe

ping Eliminated

st few years, the design n butt weld flanges has proved that there is no elding heat warping the flange. Warping has ntered in some cases n flanges were used as so near the face of the the heat has some effect some instances it has ary to machine the face on flange after welding. butt-weld flanges elim- danger of warping and r remachining.

is used today on prac- ry installation that re- quality. However, there low-pressure installations user feels welding is too w new developments in ttings are lowering the welded installation. Often t part of cost of making in preparing, laying out, ting and lining up to get eld. These are the costs y new developments in

step to reduce costs is to he welding operator gets fitting for the job. Shop how much time can be oking up tickets and tags ing dimension tables, try- ntify fittings from a stock f various sizes and stand- provide positive identifica- size and standard of each w is stamped into the fit-

ting along its side. Anyone without any knowledge of pipe standards can easily identify a fitting so stamped.

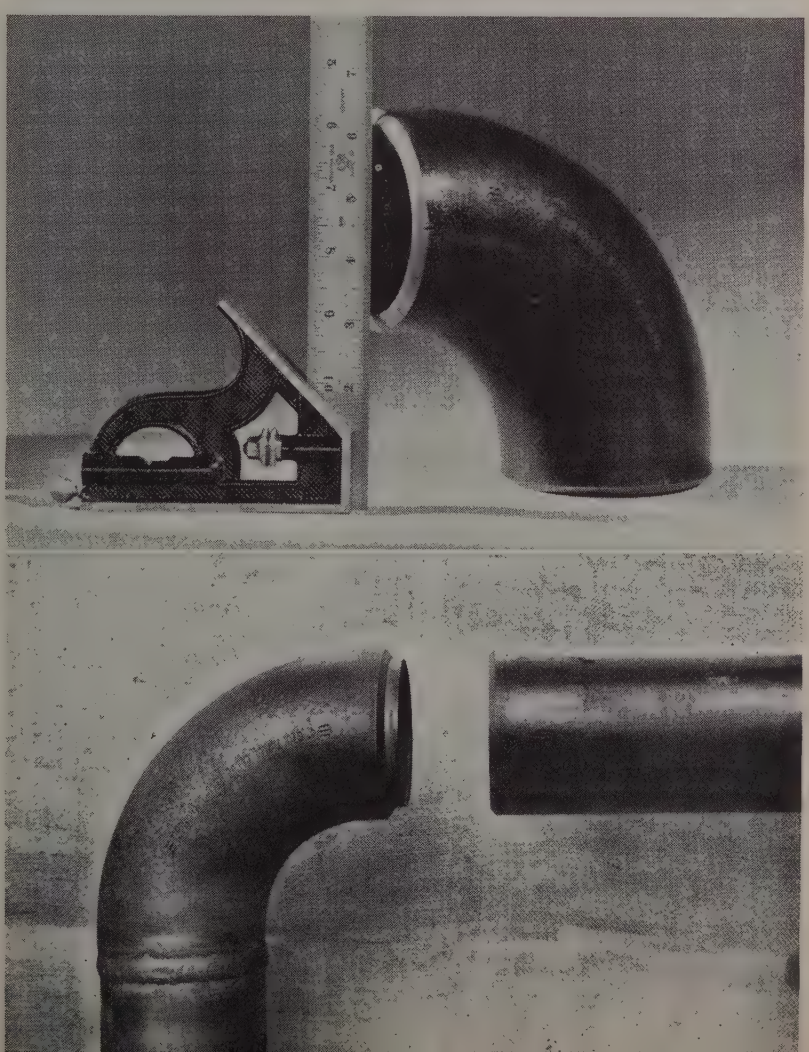
Given the right fitting, the next problem is to line it up. Fittings are machine beveled accurately so there is no problem in their joining evenly against the pipe end. The real time lost is in trying to determine the angle at which the fitting should be turned to fit the next run of piping. An angle cannot be measured without some reference point to start from so the center line of the fitting first must be determined. This takes time and is not the easiest thing to do on an irregular shaped object like an elbow. Hence, the new development of marking center lines on elbows is valuable. These center lines are machine marked for accuracy. With these as reference points, it is easy to determine any angle at which it is wished to place the elbow.

Lining up the welding fitting so it is concentric with the pipe end often is facilitated greatly by use of various jigs and clamps. An easy means of lining up, however, is not available in all cases. A new fitting which lines itself up now has been developed. It has a centering ring, forged integral with the fitting, to center the elbow into the pipe, thus assuring accurate alignment instantly without any leveling or shimming. This ring will support the pipe end, holding it in readiness for welding and so eliminates the need for extra support.

Ring Strengthens Weld

In addition to saving time in lining up, this ring has been found to improve the strength of the joint weld by assuring complete penetration. This centering lip acts as a backing-up ring as the operator can weld against this ring without fear of burning through. The weld thus extends clear down to the bottom of the bevel, which is not always the case in some butt welds. The ring also stops weld metal from flowing inside the pipe, thus preventing formation of projections or icicles to obstruct the flow. The ring is an integral part of the elbow, so there is no danger of its coming loose. It is so small and fits so snugly to the pipe that there is no measurable friction loss.

Developments in welding and in welding fittings have only begun. It is expected that they will develop so rapidly and show such quality and economy that soon all pipe lines, large and small, will be welded.



rking centering lines on the the factory now aids greatly up work in the field. Small how horizontal and vertical es. Lower, centering fittings ally center elbow in pipe, af- rate alignment. Also act as uring welding. This prevents l from flowing inside the pipe ts complete penetration when making the weld

New Barrels From O

Roller conveyor is synchronized with continuou automatic lowering unit to provide fast, efficie transportation of steel barrels and drums b tween various floor levels. Other handling oper tions also mechanized for maximum speed an efficiency

■ MANY OIL refineries have recently installed complete mechanical handling facilities for use in carrying returned oil barrels and drums through cleaning, repainting and refilling operations. These fast, highly efficient, effortless aids to efficient plant operation afford significant economies. A typical example is found in the plant of Champlin Refining Co., Enid, Okla.

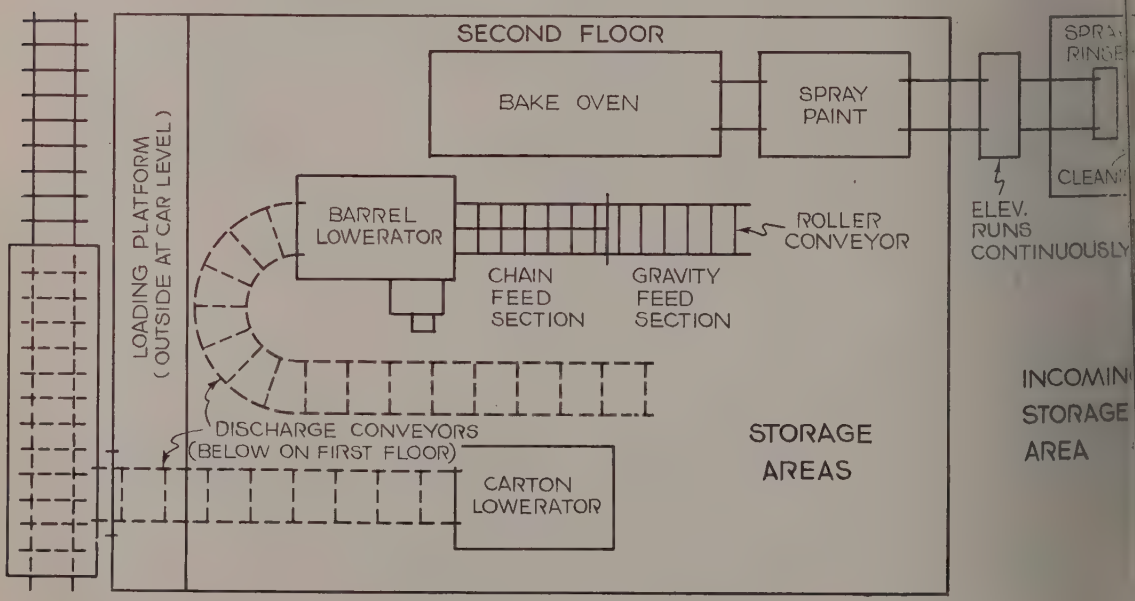
Referring to the layout diagram shown in Fig. 1, barrels from the unloading area pass first to a machine which washes and rinses the inside of the drums. This machine consists of a platform on which the drum is placed with the end containing the bung at the bottom. A spray head extends through the opening up into the drum. This head is driven by an electric motor with gear reduction to revolve the spray inside the drum. A 3-way valve is used to control the operation of the spray head. In one position, a high-pressure hot caustic or similar solution is forced through the head. This thoroughly removes any grease or oil on the inside of the drum. Another position of the valve permits clean rinsing water to flow through the head under high pressure, thoroughly rinsing the inside of the tank.

This wash unit is located at point A, Fig. 1, and is on the outside of the small building which contains the beginning of the processing line.

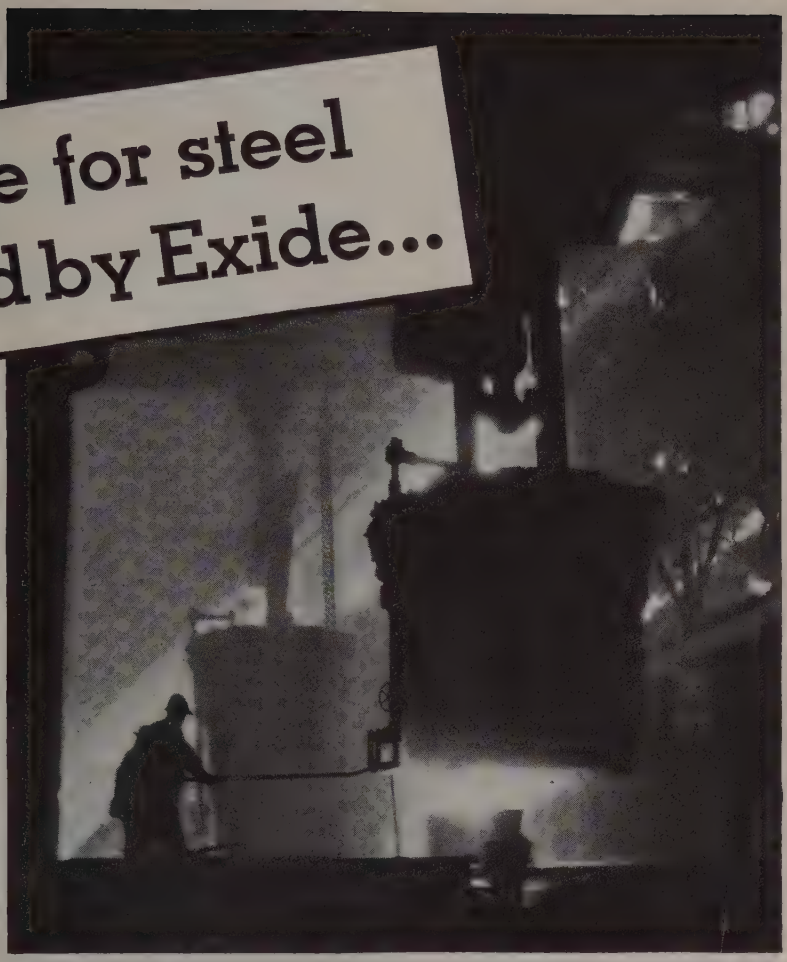
In this small building is the equipment which washes the the barrel. The drums a cleaning tank onto a where they are revol sprays which rinse the o faces. Drums are loade wash tank by hand. A clamps and revolves the bath of hot caustic under sides and ends. Drum is by operating a lever. S done automatically as roll down the adjoining tion. From this small bu roller section extends to between the small and la ings where a continuous elevator unit lifts the d discharges them at the se of the main building.

Drums are now clean ready for painting. Paint

Fig. 1—Layout diagram of cleaning, painting and baking equipment with conveyors



new use for steel developed by Exide...



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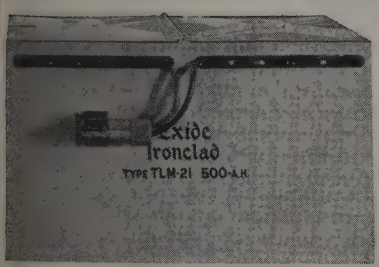

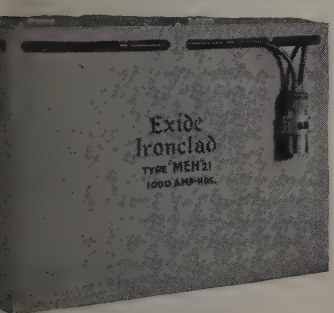

UNTIL now, wood has been used for the trays that hold the cells of all storage batteries manufactured for use in electric trucks, tractors and storage battery locomotives.

In keeping with progress, Exide has developed steel trays—a new use for steel that promises to run into substantial volume.

Steel has many advantages. By saving space, it permits the use of higher voltage and higher capacity batteries within the limited space of the battery compartments of industrial trucks. Steel eliminates the need for multiple trays, making it possible to assemble many cells in one strong steel tray properly insulated and painted.

The steel industry has been built by finding new uses for steel. Here is another—and an important one. Exide is proud to lead the way in presenting this new use to the steel industry.

THE ELECTRIC STORAGE BATTERY CO., Philadelphia
The World's Largest Manufacturers of Storage Batteries for Every Purpose
Exide Batteries of Canada, Limited, Toronto

by hand spray guns with the drums revolving on rollers, the operator moving the spray gun back and forth to cover the surface. The continuous lift elevator discharges drums into the painting area at the rate of about two per minute. Drums are either painted immediately or placed in storage on the second floor for painting at a later time. Drums usually are painted at a rate of 80 to 100 per hour. Painted drums pass directly into a bake oven where the paint is dried.

From this unit the drums are placed on a section of gravity roller conveyor leading to a lowerator unit where the drums are taken down to the first floor. This unit has a capacity of 80 to 320 barrels per hour. The variation in speed is obtained with a Reeves variable speed transmission having a ratio between maximum and minimum speeds of 4 to 1.

The roller conveyor section, lowerator and drives are shown in Fig. 2. An interesting arrangement is incorporated in the lowerator feeder mechanism to synchronize feeding of barrels from the roller conveyor to the lowerator. The lowerator unit consists of two continuous chains passing over large sprocket wheels and carrying trays fastened between the chains at intervals along their length. These trays are pivoted so a barrel placed in the loading side of the machine is picked up by the fingers of the tray passing between roller sections. Tray then lifts the barrel from the roller conveyor, carries it to the downward moving sides of the chains, where it goes down to the first floor unloading station shown in Fig. 3.

Barrels are fed into the lowerator by a chain carrying dogs which engage barrels at correct intervals. Barrels placed on the gravity conveyor section move automatically against a bar section which holds the drum in place until released from the chain drive engaging the drum head to feed it into the lowerator. The chain drive is synchronized with the lowerator so that drums are fed in at correct intervals. Thus both the operation of the roller conveyor and the lowerator unit operate continuously and automatically.

Barrels are stocked on the second floor so an ample supply is available at all times to the filling line on the first floor. This line is served by the lowerator and the gravity feed roller conveyor section shown in Fig. 3. As barrels descend in the lowerator, fingers on the chains form pass between sections of the conveyor rollers which permit a barrel to start down the roller conveyor section.

On the first floor there is a filling line where the barrels are received, are filled with the required material, ready for shipment. The roller conveyor sections are employed in loading cars.

Fig. 4—Loading station of lowerator unit. Photo courtesy Reeves Pulley Co., Columbus, Ind.

Fig. 2 (Upper)—Section of roller conveyor which automatically feeds lowerator unit

Fig. 3. (Lower)—Discharge end of lowerator unit on lower floor with roller conveyor carrying drums to storage or to filling station. Photos courtesy Reeves Pulley Co., Columbus, Ind.

Cartons Also Handled

In addition to handling barrels and drums, there are a large number of cartons to be handled in and out of the storeroom on the second floor. Fig. 4 is a view of the lowerator unit on the second floor employed in carrying these units to the unloading station shown in Fig. 3 on the first floor. This lowerator also is equipped with a variable speed transmission, giving a wide range of operating speeds. The lowerator is constructed quite similarly to the barrel machine previously described.

At the first floor level the gravity roller conveyor sections are brought up to the discharge end of the lowerator in such a manner that cartons are carried directly to the loading box cars on the adjoining

(*Please turn to Page*

M. To Round Out Year's Work

lantic City Annual Meeting

ECOND annual meeting
ican Society for Testing
Chalfonte-Haddon Hall,
, N. J., June 26-30, will
balanced program with
ple number of sessions
metals, their specifica-
g and performance. Ses-
eal with iron, steel and
metals; ferroalloys; fa-
corrosion; methods of
iography, magnetic test-
allography; and coal and
is. Action will be taken
ndards and revisions to
ndards.

est to those concerned
ation of metals at low
es, in such fields as re-
railroads, will be a
forum on "effect of sub-
e temperature on prop-
etals," sponsored by the
mittee on effect of tem-

rteenth Edgar Marburg
l be delivered by H. F.
fessor of engineering ma-
iversity of Illinois, Ur-
His subject is "Stress,
Structural Damage."

l be the first meeting in
ity to be accompanied by
of testing apparatus and
equipment. Twenty-four
rers have engaged space
their products. In addition,
society committees will
xhibits directing attention
ork.

e program for the meet-
follows:

Tuesday, June 27

MORNING

committee E-9 on research.
committee E-10 on standards.
ort of executive committee, by
arwick, secretary-treasurer.
address, "Glimpses at Petro-
by T. G. Delbridge.
n of new officers.

AFTERNOON

Iron

committee A-2 on wrought

committee A-3 on cast iron.
al Properties of High-Strength
on," by Jasper O. Draffin and
ighton Collins, University of

of Chromium on Oxidation Re-
e of Cast Iron," by Charles O.
s, Union Carbide & Carbon Re-
Laboratories Inc.
committee A-7 on malleable
stings.
ce of High-Silicon Malleable
Drilling," by H. A. Schwartz,
al Malleable & Steel Castings
C. Kasper and N. E. Mertz,
chool of Applied Science.
of Carbon Nodule Size and Ten-
roperties of Malleable Cast
by H. A. Schwartz, National Malleable & Steel Castings Co., H. J. Schindler and J. F. Elliott, Case School of Applied Science.
Report of sectional committee A-21 on specifications for cast-iron pipe and special castings.

EVENING

Water

Report of committee D-19 on water for industrial purposes.
Report of joint research committee on boiler feedwater studies.
"The pH, Dissolved Iron Concentration, and Solid Product Resulting from Reaction Between Iron and Pure Water at Room Temperature," by Richard C. Corey and Thomas J. Finnegan, Consolidated Edison Co. of New York Inc.

Roundtable Discussion of Effect of Subatmospheric Temperatures on Properties of Metals

"Sub-Size Charpy Relationships at Subzero Temperatures," by H. Habart and W. J. Herge, National Tube Co.
"Factors Affecting Notched-Bar Impact Tests of Steel at Low Temperatures," by Walter Crafts and John J. Egan, Union Carbide & Carbon Research Laboratories Inc.

Wednesday, June 28

MORNING

Fatigue, Corrosion

Report of research committee on fatigue of metals.
"Fatigue Tests of Wire," by C. P. Wampler, A. O. Smith Corp., and N. J. Alleman, University of Illinois.
"Fatigue Strength of Machined Forgings 6 to 7 Inches Diameter," by O. J. Horger and H. R. Neifert, Timken Roller Bearing Co.
"Fatigue Machines for Testing Structural Units," by R. L. Templin, Aluminum Co. of America.
Report of committee A-5 on corrosion of iron and steel.
Report of committee B-3 on corrosion of nonferrous metals and alloys.
"Chemical Removal of Corrosion Products in Determination of Corrosion Rate of Zinc," by E. A. Anderson and C. E. Reinhard, New Jersey Zinc Co.
"Atmospheric Corrosion of Nonferrous Metals and Alloys," by C. W. Borgmann, University of Colorado.
Report of joint committee on exposure tests of plating on nonferrous metals.

AFTERNOON

Coal, Gaseous Fuels

Report of committee D-5 on coal and coke.
Report of sectional committee M-20 on classification of coals.
Report of committee D-3 on gaseous fuels.

Marburg Lecture

"Stress, Strain and Structural Damage," by H. F. Moore, professor of engineering materials, University of Illinois.
Award of Dudley medal to Roy W. Carlson, Massachusetts Institute of Technology.

EVENING

Radiography, Magnetic Testing, Metallography

Report of committee E-4 on metallography.
"Application of Color Photography to Metallographic Work," by R. P. Loveland, Eastman Kodak Co.
Report of committee E-7 on radiographic testing.
"Use of Radiography in Development of Castings for Mass Production," by Don M. McCutcheon, Ford Motor Co.
"Factors Governing Practical Sensitivity of Radiographic Tests," by H. H. Lester, Watertown arsenal.
"Modern Testing of Aircraft Materials." "Correlation of Some Mechanical Tests of Aluminum Alloys with X-Ray Tests," by Tom A. Triplett, Triplett & Barton Inc., and W. Lavern Howland, California Institute of Technology; "Some Mechanical Tests of Aluminum Alloys 14ST and 24ST," by W. B. Mechling and S. S. Jack, California Institute of Technology.
Report of committee A-6 on magnetic properties.
"Magnetic Analysis — Modern Methods and Applications," by Theodor Zuschlag, Magnetic Analysis Corp.

Thursday, June 29

MORNING

Steel, Ferroalloys, Effect of Temperature

Report of committee A-1 on steel.
"The Work-Brittleness Test," by H. W. Graham, Jones & Laughlin Steel Corp.
Report of committee A-10 on iron-chromium, iron-chromium-nickel and related alloys.
"Alloy Casting Research Institute Test Block for Heat-Resisting Alloys; Its History, Selection and Utilization," by O. E. Harder, Battelle Memorial institute.
"Hastelloy Alloys, Their Physical and Corrosion-Resistant Properties," by F. G. McCurdy, Haynes Stellite Co.
Report of sectional committee B-36 on standardization of dimensions and materials of wrought iron and wrought steel pipe and tubing.
Report of committee A-9 on ferroalloys.
Report of joint research committee of A. S. M. E. and A. S. T. M. on effect of temperature on properties of metals.

EVENING

Methods of Testing

Report of committee E-1 on methods of testing.
"Tension Specimen Shape and Apparent Strength," by F. O. Anderegg, Owens-Corning Fiberglas, Royal Weller and B. Fried, Ohio State university.
"Rockwell Hardness of Cylindrical Specimens," by W. E. Ingerson, Bell Telephone Laboratories Inc.
"Analysis of Rockwell Hardness Data," by R. L. Peek Jr. and W. E. Ingerson, Bell Telephone Laboratories Inc.
"Stress-Strain-Time Characteristics of Materials," by Glenn Murphy, Iowa State college.
"A Study of the Influence of Speed on the Torsion Impact Test," by O. V. Greene and R. D. Stout, Carpenter Steel Co.
"Load Weighing and Load Indicating Systems, an Historical Account of Their Development with Particular Reference to Materials Testing Devices," by Chester H. Gibbons, Baldwin-Southwark Corp.
"Photoelastic Analysis of a Prestressed Beam," by F. O. Anderegg, Owens-Corning Fiberglas, Royal Weller and B. Fried, Ohio State university.

Friday, June 30

AFTERNOON

Nonferrous Metals

Report of committee B-1 on copper and copper alloy wires for electrical conductors.
Report of committee B-2 on nonferrous metals and alloys.
Report of committee B-5 on copper and copper alloys, cast and wrought.
"Nomenclature and Classification of Cast Copper and Copper-Base Alloys," by

(*Please turn to Page* 66)

Oil Well Pumps

Pilot treatment of sample bars permits determining exact procedure and temperatures needed to produce best combination of physical properties in the material. Extremely rigid service requirements strongly emphasize quality. Alloy steels give increased usefulness to product

■ EQUIPMENT for pumping oil wells can be divided into two sections, the sucker rods and the pump proper. Sucker rods are the means of transmitting reciprocal motion from the pumping power at the surface to the pump at the bottom of the well, a distance usually of several thousand feet. The pump is the mechanism that lifts the oil to the surface.

Sucker rods are usually 25 or 30 feet long, with diameters varying from ⅝ to 1 inch. The ends are upset by forging to form a square shoulder and pin to facilitate connection and to strengthen the rod at the connection point, Fig. 1. In the Axelson rod, the upset is formed with a long, sloping shoulder to minimize stress concentration.

The rods are made from two analyses of nickel-molybdenum steel, designated here as A and B. The choice between them, as far as service is concerned, lies in the fact that analysis B has better corrosion resistance. The analyses are held to extremely close limits since it has been found that variations affect the serviceability of the rods. The specified analyses are given in Table I.

After forging and straightening, the rods are given a heat treatment consisting of normalizing at from 1550 to 1650 degrees Fahr. and drawing at from 1050 to 1225 degrees Fahr. This operation is performed in a specially designed fu
2. The exact normalizing
ing temperatures for ind
of rods are determined
known as pilot treatin
bars from each heat
treated. Sample bars
heat are heat treated

TABLE I

	"A
Carbon	0.2
Manganese	0.8
Phosphorus, max.	0.0
Sulphur, max.	0.0
Silicon	0.2
Nickel	1.8
Molybdenum	0.3

temperatures and then te
temperatures giving the
tion of physical properti
the specifications are use
ing the rods of that lot.

This care in heat treat
duces an excellent combi
physical properties in p
ance with chemical char
in the finished rod. The
sile point ratio is in the
hood of 80 per cent. Du
impact strength are both
rods have excellent fatigue
which is not greatly a
"notch effect." Both co
sistance and corrosion
strength are exceptionally
of these properties are of
portance to the serviceabil
rods.

Minimum physical
specified for the rods are
Table II.

After heat treatment, the
cleaned and inspected fo
such as rolling or forgi
or cracks. Defective rod

Abstracted from *The Moly Matrix*, published by Climax Molybdenum Co., New York.

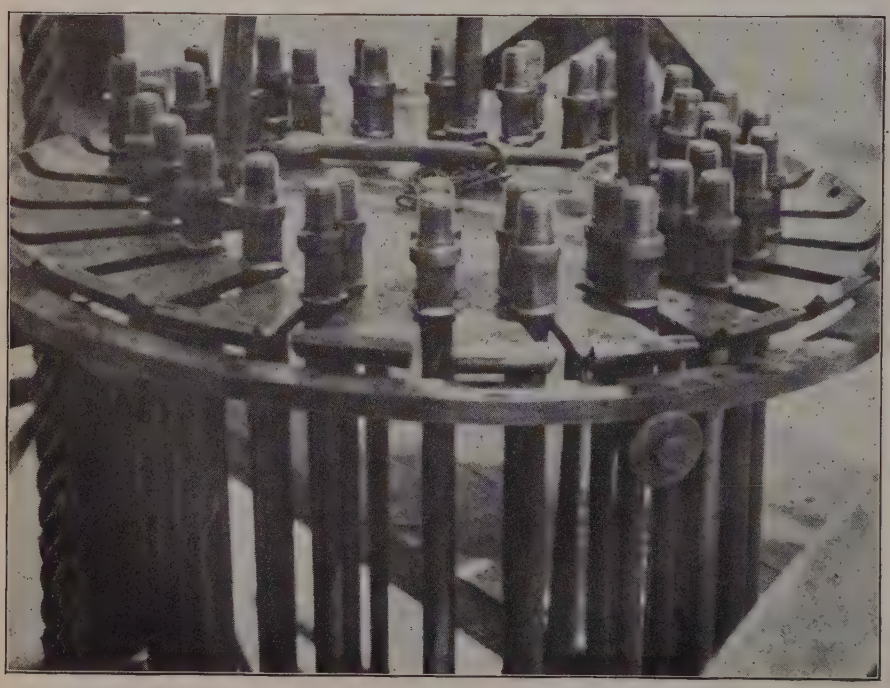

Fig. 1—Close up of sucker r
ing square shoulders and

S SUPERIOR TIGHTNESS OF BETHANIZED COATING

est duplicates some of the severest distortion encountered in wire fab-. It is comprehensive proof of the r tightness and ductility of the elec-bethanized coating.

nple of bethanized wire twisted in this yours for the asking. Run your fingers e close-wrapped grapevine twist, over the flat-bent loop at one end. Feel how flawlessly smooth these surfaces are. See the smooth unflaked texture of the zinc at the points where it has been most highly stressed.

This examination requires only a minute. Yet it gives you indisputable proof of the economy of fabricating with bethanized wire and of the high quality of products made from it.

BETHLEHEM STEEL

ETHLEHEM STEEL COMPANY

jected, while those that have become bent or kinked, but are otherwise perfect, are put through a straightening machine. Rods thus straightened are given a supplementary normalize to relieve any possible strains. Machining, which consists of threading the pins, is done after heat treating. After final inspection and assembly of couplings the rods are ready for service.

TABLE II

	"A"	"B"
Tensile Strength, p.s.i.	85,000	85,000
Yield Point, p.s.i.	70,000	70,000
Elongation in 8", %	19	19
Proportional Elongation, %	29	30
Reduction of Area, %	65	67
Hardness, Brinell	166	166
Izod Impact, ft. lb.	90	100

Sucker rod couplings are made from carburized nickel-molybdenum (SAE 4615) steel. The coupling is a short threaded sleeve used to join the sucker rods together when they are made up into a pumping string. Since the couplings rub in the tubing, they are carburized to give them extra wear resistance. Case depth is 1/16-inch and the case hardness is specified at 60 to 65 Rockwell C. After being carburized, the couplings are drawn at 350 degrees Fahr. to insure requisite toughness in the core. Then they are ground and finish machined. The same close process controls are observed with couplings as with sucker rods, in order to maintain quality at the highest degree.

The conditions under which sucker rods work are bad, but those that pumps are expected to endure are worse in some respects. They are subject to loads of much the same character and to the same corrosive agents. In addition, they are subject to the abrasive action of fluid-borne sand to a greater degree than are sucker rods.

There are manufacturing problems involved that do not arise in the case of sucker rods. Parts are finished to extremely close tolerances which must be maintained in service. Parts such as liners and plungers are, in reality, cylinders of quite thin section. Any noticeable distortion would make them unfit for use.

The two problems, physical and production, resolve themselves into one of selecting a steel that will carry the loads imposed and resist corrosion; take an extremely hard, wear resisting case; and develop only minimum distortion as a result of heat treatment. It has been solved by the use of carburized nickel-molybdenum steel.

Parts Case Hardened

Cages, liners and plungers are among the more prominent parts made from SAE 4615. Balls act as valves in these pumps. Cages hold the balls in place during operation. Heavy duty cages made from SAE 4615 are carburized to give a case hardness of 60 to 65 Rockwell C and subsequently treated to give a core hardness of 300 brinell. It has been found that the treatment gives the guides of the cages sufficient hardness to prevent pounding out and sufficient toughness to prevent breakage.

Liners and plungers are case hard-

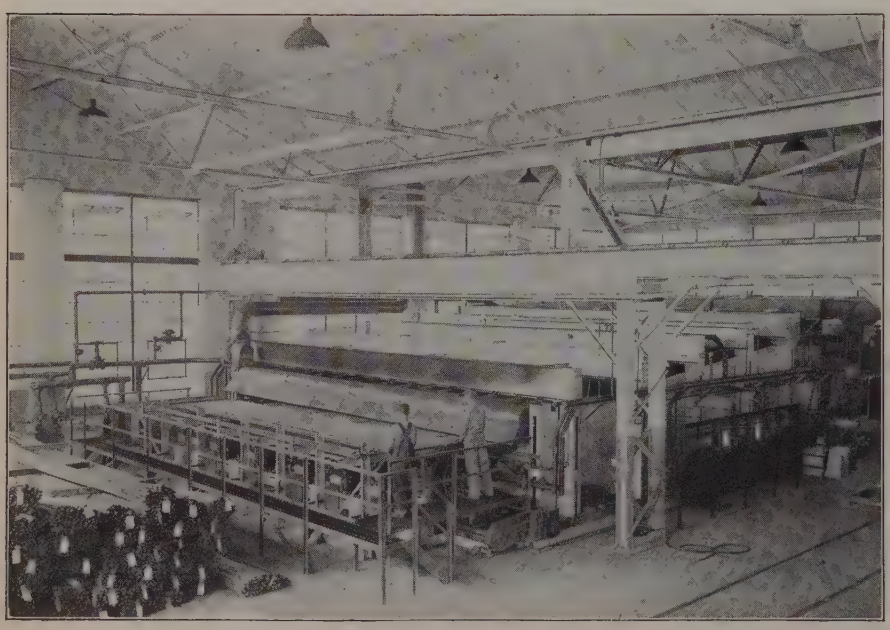

Fig. 2—Special furnace used for normalizing sucker rods

ened to between 58 a
well C. No trouble is
from distortion during
ment because the molyb
tent of the steel causes
harden uniformly witho
to drastic quenching.
indicates these parts h
resistance to abrasive
fluid-borne sand.

Careful selection of
close control of manufac
esses produced pumps
made remarkable servi
In one case, such an alloy
would be still going stro
days of service under co
had ruined its predece
days. In another case
ator was forced to take
made of unalloyed steel
days. An alloy steel p
same well was still ru
888 days. Experience s
ators can expect anyw
three to ten times the s
pending on conditions,
pumps with parts made
molybdenum steel.

♦

French Foundry T
In Eight Languag

■ *Dictionnaire Interna
Fonderie,* (International
Dictionary) edited by L'A
Technique de Fonderie, Pa
334 pages; 3½ x 5½ in
plied by STEEL, Cleveland;
by Penton Publishing Co.
ton House, Westminster
S.W.1.

This international dict
foundry terms, in prepa
several years and issue
Foundry Technical a
Paris, France, gives the
in the French language
800 words and technical
in the foundry. In additi
alphabetical indexes in Fr
man, English, Spanish,
Polish, Portuguese, and
vakian. Independent of th
sion especially appointed
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In the present edition th
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In a second section the w
followed by the numerica
The same method is usec
presentation of terms in th
foreign languages.

Melting Practices ove Steel Castings

NEOUS methods of discussed at a symteel melting practice, ited one of three sesd by the steel division. ere contributed in the

h the converter methaking, F. B. Skeates, erintendent, Link-Belt recalled how sideters went into disrehe World war because lting costs and high ent, and how the deprocess returned them

ed that manganese in om the cupola should gh, inasmuch as a high f this element gives a blow and tends to corssel lining. He also ortance of holding the size and having tuyeres ight from the bottom. ortant point is that the ile at the cupola and ladle should be held sing a form for lining, ng metal going into the

furnace, losses, metal melting practice and formance, were consid- F. Landgraf, Lebanon ry, Lebanon, Pa., in disuction furnace practice. mentioned five advans type of furnace as inibility as to types of alan be produced in sucers, low melting losses, analysis control, ease ure control, and a high niformity of product.

mly High Quality

dgraf does not contend duction furnace can proy given analysis a steel the best made in an arc As an operator of both finds that induction furis of more uniform high his he attributes to the of induction furnace praca minimum of reliance human element.

he points brought out by rris, metallurgist, Birds- Foundry & Machine Co., in his paper on acid openactice, was that at his ron is charged first. When thus charged and spread er the bottom of the explained, the iron attacks the bottom to a lesser degree than the heavier scrap; and the iron having a lower melting point than the remainder of the scrap melts first to form a pool of metal which is covered by a slag high in manganese oxide and silicon dioxide.

Mr. Harris gave the following operating data: Fuel consumption ranges from 27 to 30 gallons of oil per ton of metal; furnace roof usually runs from 800 to 1000 heats before requiring attention; sidewalls are repaired after 300 to 350 heats; and checkers and slag pockets are good for 550 to 600 heats.

Would Improve Draft

Basic open-hearth practice was covered by J. W. Porter, American Steel Foundries, East Chicago, Ind., who recommended two sources of draft—a fan to force air into the furnace and a stack to draw air out of the furnace. In making alloy additions, the speaker favors adding 15 per cent ferrosilicon to the bath 10 minutes before tapping. A charge of 80 per cent manganese is added to the ladle through a chute, the amount varying in accordance with the residual manganese in the bath. For adjusting silicon content, 50 per cent ferrosilicon in ½-inch lumps is added through a chute over the furnace runner.

Methods of making basic electric steel by the arc furnace were outlined by C. W. Briggs, technical advisor, Steel Founders' Society of America, Cleveland. He directed attention to a modification of the double slag process wherein aluminum is used in place of carbon to obtain a reducing slag. This type of slag, he explained, finds its greatest application in stainless steel or other alloys where it is desired to maintain carbon content at a low figure. The method has equal application to carbon steels and low-alloy steels.

Lime should be mixed with the aluminum, Mr. Briggs asserted, so that it may be spread more evenly over the bath and to prevent the slag from becoming too fluid. Analyses have shown no aluminum pickup.

Of the approximately 265 foundries in this country, which in 1937 manufactured steel castings, 175 used the electric melting process for part or, in most cases, for all of their production. This fact was brought out by Werner Finster, metallurgist, Reading Steel Casting division, American Chain & Cable Co., Reading, Pa., who devoted his paper to acid electric practice.

Majority of the arc furnaces for steel foundry use are acid lined, he stated. When charging 5 tons per heat, his average on five linings and roofs was 900 tons; when 4-ton heats were charged, life of roof was increased to 1000 tons and lining to 1200 tons.

Speaking at one session, H. H. Blosjo, metallurgist, Minneapolis Electric Steel Castings Co., Minneapolis, described a rugged but inexpensive instrument for rapidly determining carbon in the melt of small electric furnaces. The unit compares magnetic permeability of a bar of unknown carbon content with permeability of a bar of known carbon.

According to the speaker, the instrument has proved valuable for control of carbon in low-alloy steels, where the alloy residuals are controlled closely; it is especially valuable to a foundry whose production is mainly plain carbon steel and whose melting equipment is rapid.

Determines Sand Strength

Data which is characteristic of molding sand in general but in particular with synthetic bonded sands containing washed silica sand, bentonite and water, were dealt with in a paper by C. W. Briggs, Steel Founders' Society of America, Cleveland, and R. E. Morey, naval research laboratory, Anacostia, D. C. This paper brought out that necessary strength for molding sands ranges from 2 to 12 pounds per square inch and that these strengths are produced by addition of from 2 to 10 per cent bentonite.

The official exchange paper of the Association Technique de Fonderie de France, contributed by G. Delbart, Denain, France, pointed out that homogeneity of cast steel evidently is in direct relation with the primary structure, since the cast steel always preserves its solidification structure under a form more or less attenuated. It is known that the solidification grain is refined by additions of vanadium, molybdenum, titanium, and a simple addition of 0.15 per cent vanadium

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HEREWITH is concluded the report of important technical sessions held during the forty-third annual convention of the American Foundrymen's association in Cincinnati, May 15-18. A number of sessions were reviewed in STEEL last week, pages 69-71

decidedly improves mechanical properties of a cast steel even after a simple anneal not preceding homogenization.

Report of A.F.A. committee on heat treatment of steel castings, presented by Chairman D. C. Zuege, Sivyer Steel Casting Co., Milwaukee, incorporated a survey made for 1938. Data show that 45 per cent of all the open-hearth foundries reporting made 5 per cent or less alloy steel while the electric steel foundries showed only 20 per cent making carbon steels almost exclusively. Obviously, as the percentage of alloy steels increases the complexity of heat treatments increases.

About 76 per cent of the open-hearth foundries indicated that they are giving 100 per cent of their castings some type of heat treatment. In this group 17 foundries reported that they use pit or car-type furnaces exclusively. In the electric foundries 20 reported that they did not use hearth or box-type furnaces while 14 used hearth-type to supplement their car-type equipment. Only four of the newer recirculating air-type furnaces for drawing are used in foundries reporting.

Average of 14 foundries using oil exclusively as fuel showed an average cost of $1.73 per ton, seven using gas exclusively had a gas cost of $2.13 per ton, while four foundries using electricity averaged $6.03 per ton for castings treated. Out of 60 foundries, 27 are still controlling all temperatures manually through guidance by indicating or recording pyrometers while 33 foundries use automatic temperature control on at least some of their units.

The most popular quenching medium is water, 19 foundries reporting to this effect. About one-third reported that on alloy steels, especially if they are of the air-hardening type or are intricate in shape, a preheating treatment is given the castings before cleaning.

Resisting High Temperatures

Contributing a paper on high alloy steel castings for heat and corrosion resistance, James Corfield, Michigan Steel Castings Co., Detroit, pointed out that choice of materials for castings intended for use at high temperatures involves consideration of two major factors —resistance to chemical attack and physical strength. In oxidizing conditions a minimum of about 15 per cent chromium plus at least 12 per cent nickel is required, while in a high sulphur atmosphere 24 per cent chromium is essential.

In selecting an alloy for castings for use in a corrosive environment at normal or moderately high temperature, safest method is to expose test pieces under actual operating conditions, Mr. Corfield said. Where previous experience indicates the type of alloy required, details of analysis should take into account the factor of castability and other features which render the material adaptable. Up to the present no standardized system of classifying heat and corrosion-resisting alloys according to chemical analysis has been adopted.

A paper on copper as an alloying element in cast steels, prepared by C. T. Greenidge and C. H. Lorig, Battelle Memorial institute, Columbus, O., discussed effects of copper additions up to 2.40 per cent. The low alloy cast steels considered in the investigation contained one or more of the following elements: Vanadium, titanium, aluminum, molybdenum, columbium, zirconium, chromium, silicon and manganese, the last two in higher than normal percentages.

Results indicate that copper contents above 0.50 per cent increase markedly the tensile and yield strengths of fully annealed, normalized and quenched and drawn cast steels with only a slight lowering of ductility and resistance to impact. Several alloying combinations containing copper and one or more of the other common alloying elements are satisfactory in the low-alloy, high-strength cast steels.

Gray Iron

■ Interest in activities of the gray iron division ran high. Three technical sessions were conducted and provided nine papers on various phases of iron foundry practice, improvements in irons, and heat treating procedure.

Experimental work to determine cause of a crack in the central web of a cylinder block and the means adopted to solve the problem were outlined in a paper by L. A. Danse, Cadillac Motor Car division, General Motors Corp., Detroit. Following an obvious theory that the crack was caused by stresses set up in cooling of the casting, a number of thermocouples were placed at strategic points in the green sand body cores and readings were plotted.

Solution of the problem was found in construction of an oven through which the castings pass immediately after they are shaken out, and in which the temperature is maintained at approximately 1200 degrees Fahr. for 3 hours and then lowered gradually. The treatment is somewhat similar to that accorded cast iron car wheels, with exception that the period is shorter.

Procedure for producing iron having a tensile strength of 60,000 pounds and more per [illegible] was described in a pa[per] Roth, president, Mot[or] Co., Milwaukee. Total [car]tent is in the vicinity [of] cent. By proper cup[ola] tion the iron is machi[ned] ings as small as 3-pou[nd] lustrating potential p[ro]duction this iron, the speake[r] test bars heat treated [and] in oil showed an ult[imate] strength of 91,000 [pounds] square inch. The mate[rial] wear resistance and g[ood]machinability.

The official exchange [paper] Institute of British F[oundry]men contributed by F. Whit[e]ton, Chambers & Co. [Ltd.], town, England, describ[ing] the castings employed i[n] gas industry, with r[e]molding and coremaki[ng] also chemical and phys[ical] ties of the irons which [are] most suitable.

British Molding P[ractice]

According to Mr. Whit[e] ings are made almost [entirely] green sand. A natur[al] sand is used, mixed eit[her] or being put through a [mul]integrator. Facing sa[nd] approximately 10 per c[ent] dust (200 mesh) and th[e] addition varies from 5 [per] cent. In comparison wit[h] sands, the following da[ta] terest: Refractoriness 1[650] Cent.; sinter 1340 degr[ees] ignition 2.00 per cent; [silica] per cent; iron oxide 1.5 alumina and titania 6.8 lime 0.40 per cent; alkali[s] per cent.

Fulton Holtby, Univer[sity] nesota, Minneapolis, desc[ribed] vestigation of rapid [and] measurements of cast ir[on] indicated that a tungs[ten] thermocouple protected [by] limanite tube gave good [re]vantages claimed are [the] temperature measureme[nt] made, that determinati[on] made rapidly, it is not [affected] smoke and slag, it ca[n be] smaller than other type[s] low in cost.

Copper, aluminum, si[licon] for addition to cast iron sidered in a paper by V. and T. E. Barlow, Battell[e] institute, Columbus, O. contained 6 per cent alu[minum] per cent silicon and 80 p[er] per. Results indicated th[at] of 1 per cent are more raising tensile strength ness as measured by resi[st] additions of 0.5 per c[ent] added as ferrosilicon.

Discussing this pa[per] Burgess, Union Carbide

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These characteristics of Granite City STRIPLATES are improving our customers' products, and giving them new assurance of invariable quality:

Table flatness
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Produced with extreme care under close, expert supervision on Granite City Steel Company's new continuous mills, STRIPLATES are meeting enthusiastic approval. They are "Tailor-made" in a wide range of gauges and sizes to meet almost any requirements. A possible better source of supply should always be investigated . . . we invite your inquiry.

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Research Laboratories Inc., Niagara Falls, N. Y., questioned relation of results between ferrosilicon and the aluminum-silicon alloy. He said there was too much difference in the composition of the materials. He believed that the final silicon and carbon contents of the irons used should be more comparable.

Richard Schneidewind, University of Michigan, Ann Arbor, Mich., observed that the results obtained by Messrs. Schnee and Barlow paralleled work he and his collaborators had performed, but pointed out, however, that deflection in the base iron was low, and that any addition at all would tend to increase that value.

Undercooling in Gray Iron

A paper by Mr. Schneidewind and C. D. D'Amico, also University of Michigan, Ann Arbor, Mich., reported on undercooling influence on graphite pattern of gray iron. Results indicated that gray iron is susceptible to undercooling. This undercooling may be as great as 100 degrees Fahr. below the theoretical equilibrium freezing point and still produce gray iron; solidification temperatures between 2060 and 1970 degrees Fahr. will produce graphite patterns characteristic of actual freezing temperature, the lower the temperature, the finer will be the graphite and the greater the tendency for a eutectiform pattern; greater degrees of undercooling will inhibit precipitation to form mottled and white irons, and undercooling increases the resultant austenite transformation rates.

In another paper, Mr. Schneidewind and R. G. McElwee, Vanadium Corp. of America, Detroit, discussed the influence of composition on electric furnace irons. From their investigation the authors concluded that basic composition, carbon and silicon, markedly affect physical properties; that the factor of carbon plus one-third silicon is a practical means of determining the relationship; ladle deoxidation improves strength, deflection and Charpy impact over a wide range of compositions, and addition of up to 0.3 per cent vanadium increased tensile and transverse strengths and brinell hardness, and irons alloyed showed greater uniformity heat to heat.

Some factors involved in hardening and tempering gray iron were considered in a paper by G. A. Timmons, V. A. Crosby, and A. J. Herzig, Climax Molybdenum Co., Detroit. The authors heat treated one unalloyed and five alloyed irons in the conventional manner, by flame hardening, and in a manner suited to study effect of quenching temperature on combined carbon.

Some of the conclusions reached were that graphitization of unalloyed pearlitic cast iron takes place rapidly at 1300 to 1450 degrees Fahr., effect of alloys on graphitization rate and transformation rate are useful in controlling hardenability, and quenching and drawing is an effective method for increasing hardness and tensile strength at some sacrifice in shock resistance, transverse strength and deflection.

Effect of heat treatment on combined carbon and physical properties of car wheel iron was dealt with in a paper by S. C. Massari, Association of Manufacturers of Chilled Car Wheels, Chicago. More specifically it was concerned with the gray iron portion forming hub and web of the wheels. Results indicate that no decomposition of combined carbon occurs when the iron is heat treated at temperatures up to and including 1000 degrees Fahr. as long as 96 hours, and the physical properties as cast are not affected.

Heat treatment at temperatures just below critical causes substantial decomposition of combined carbon, degree of breakdown being dependent upon temperature. Decomposition of carbide is practically complete at 1200 to 1310 degrees Fahr. Most physical properties are lowered considerably, only impact strength showing an increase. When heat treatment is carried out above critical range 1500 to 1700 degrees Fahr. only a portion of combined carbon is decomposed; an equilibrium value of about 0.4 per cent residual combined carbon is established.

When distribution of graphite is normal the physical properties of gray cast iron are dependent upon structural condition of the matrix, and are best when the matrix is entirely pearlitic.

Job Analysis

■ Systematic approach to job analysis frequently is conducive to improvements, declared C. J. Stegemerten, superintendent, time study and methods department, Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., is presenting a paper at the job analysis session. He cautioned that analytical work continues in more or less detail throughout the entire study.

Analytical work is conducted successfully when a peculiar mental attitude is developed. There is a natural tendency to take pride in the familiarity with a subject. The speaker cited a job which was improved to such an extent by detailed motion study that time of operation was reduced to one-sixth of the time required under the original method. He directed attention to the fact that the best method of doing an operation from a labor economy standpoint is reached only when the labor requi reduced to zero. U stated, further improv is possible.

Improvement often i suggestions, Mr. Steg He warned, however worth of each suggest evaluated carefully be fered. The quickest merit of any suggest tain estimates of cost and total yearly savin expected to effect. W gestor has convinced h value of his idea, he s it to the one who is in adopt it.

Three reels of mot demonstrated how mot various operations in V plants has improved o

Apprentice Tr

■ Men must be trained oughly and the trainin in the fundamentals o This was the contenti Ewig, Cincinnati Milli Co., Cincinnati, speakin ing of Apprentices" at tice training session.

Describing the traini in his plant, Mr. Ewig all apprentices are req roll in an evening schoo pany pays the tuition; buy their own books a Weekly education me held at which the boys opportunity to speak their leadership.

All shop work of ap taken from regular schedules. A control bo in the office and all the boys is plotted. Upon of the course a bonus paid by the company. T pointed out that it is i have a short training balance manpower in This training, he expl joint responsibility of superintendent, foreme men.

Apprentices of the reg ture class, Mr. Ewig started at a wage rate of hour and are entitled t every three months, depe scholastic and shop perfo

C. J. Freund, dean, col gineering, University of troit, stressing importanc ing boys who are able straight, inquired as to w the speaker's company u covering boys who will mechanics. Mr. Ewig that a majority of the a are sons or relatives of ing in the plant, and ther

(*Please turn to Pag*

ld Insulation

ded from Page 46)

mitting a higher yield. ingot mold insulation ves greater yield but bility in pouring as ex- e. In one instance, a was poured in the af- by use of this ingot ion, it was possible to ondition in the mold so al pouring on the same ade successfully the fol- ning.

new insulation contains d clay, there are no in- hich may affect chem- in the steel with which l comes in contact. A ordinary materials used ngot molds have a tend- ow down the piping and decided carbon pickup les of the pipe. This e carbon in the steel to where it probably will pecifications. Use of this insulation completely carbon pickup from this

ingot mold insulation de- igh insulating qualities use of cork granules. nules are surrounded by retards combustion of he material is very light, nly 25 pounds per cubic usually applied by throw- bag of the material onto top immediately after

ot Size Regulated

advantage is that use of rial permits better regu- ingot size. In pouring steels for such materials or plates, the amount of d in the individual ingot ted so a definite number can be produced without gth piece of scrap remain- g ingot mold insulation, onal metal included in an get a whole number of m the ingot does not have great. This is an added

terial thus appears to have ble importance as an ingot ulation. Wherever tests made, results have been isfactory and the present the material are rapidly their consumption as me better acquainted with ibilities of this insulation. e only way to determine ue the material has in any t is to test the material's ork, the manufacturer is ing with steel makers in a mber of tests now going on throughout the country.

Pipe Specifications for Temperature, Pressure

■ *A.S.T.M. Specifications for Pipe and Piping Materials for High-Temperature and High-Pressure Services*, paperboard, spiral ring binding; 135 pages, 6 x 9 inches; published by American Society for Testing Materials, Philadelphia; supplied by STEEL, Cleveland, for $1.25; in Europe by Penton Publishing Co. Ltd., Caxton House, Westminster, London S.W. 1.

Committee A-1 of the American Society for Testing Materials for several years has been developing specifications covering steel materials for high temperature service. Several standards have been issued and published as separate pamphlets and also in the book of A.S.T.M. standards. To make specifications in this particular field available in convenient, compact form this volume has been prepared, containing 18 specifications, covering carbon steel and alloy steel pipe and tubing, castings, forgings and bolting, all of which have been used extensively. Several have been approved as American standards by the American Standards association.

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PRESSURE
AND
DIFFERENTIAL
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ANNEALING FURNACES
●
OPEN HEARTHS
●
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HAYS "OT" DRAFT RECORDER
Results in a better product because it gives a correct indication of furnace atmospheres. Built husky enough to stand the severest steel mill conditions yet sensitive enough to register accurately in increments of .0025 in. water. Employs the famous Hays Slack Leather Diaphragm—self sealing—not damaged under sudden excess pressures. Two draft values, two pressure values, two differential values, or a combination of any two of these three values may be recorded. Or a temperature recorder may be substituted for one of these values. Send for descriptive literature. Write to 960 Eight Avenue, Michigan City, Indiana.
The HAYS CORPORATION
COMBUSTION INSTRUMENTS AND CONTROL
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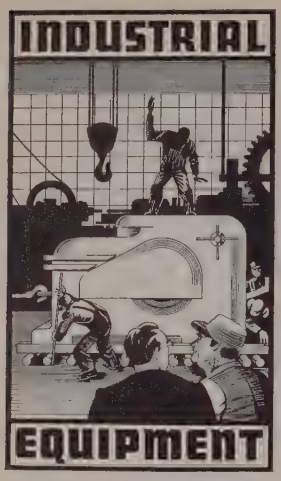
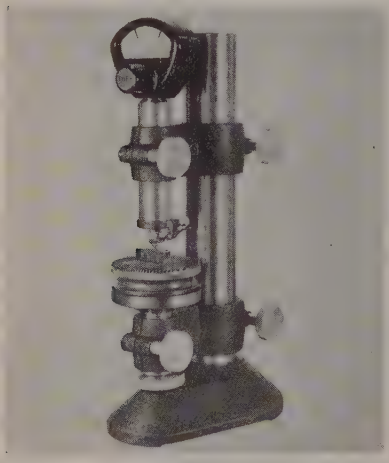


Measuring Instrument

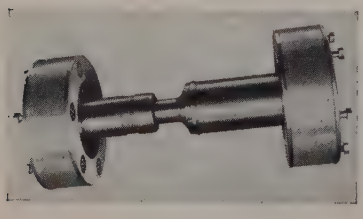
■ Swedish Gage Co. of America, 7306 Woodward avenue, Detroit, has developed the Mikrokator having "dead-beat" characteristics and no friction bearings, gears, levers or other moving parts. Pointer is mounted in center of a metal strip twisted in a helix and responds instantly to slightest movement of



measuring tip without swinging past true reading. No lights or electromagnets are used. Scales are graduated to 0.0001, 0.00005 and 0.00002-inch and can be read to one half scale division.

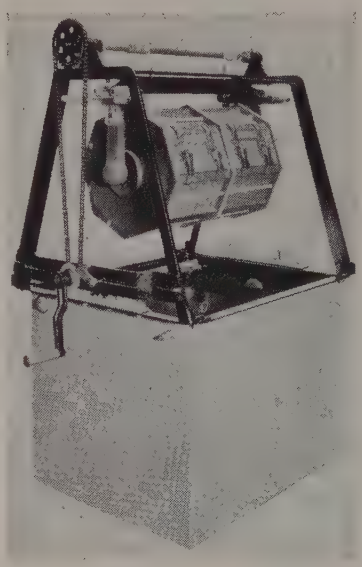
Coupling Drive-Shaft

■ Morse Chain Co., Ithaca, N. Y., offers Morflex radial coupling drive shafts in two types with capacities from 2 to 27 horsepower per 100 revolutions per minute. Long-coupled type has tubing added as required and short-coupled type is standard length. Slip joint is full spline construction, grease tight and slides freely under load. Shaft members are machined from steel forgings, piloted into coupling hub members and welded. Entire shaft is balanced. Unit is adapted for use on dynamometer drives and others with endwise shaft float.



Plating Barrel Hoist

■ Hanson-Van Winkle-Munning Co., Matawan, N. J., offers a hand-operated hoist for single cylinder plating barrels which consists of an iron framework carrying a 1¼-inch shaft on two brackets. At end of shaft is a ⅝-inch pitch, 36-tooth



sprocket connected to a 12-tooth sprocket at lower end, with a ⅝-inch pitch roller chain. Crank can be placed on opposite side of tank and requires 15 turns to lift a 14-inch diameter barrel and 17 turns for a 20-inch barrel.

Carbide-Drill Set

■ Super Tool Co., 21650 Hoover road, Detroit, offers carbide-tipped drills for masonry and other non-metallic materials, in portable cases. Sets are in three sizes and contain drills from 3/16-inch to ¾, 1, and 1½ inches respectively.

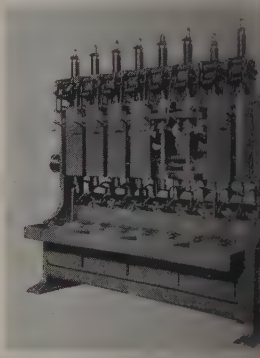
Precision Gage

■ The L. S. Starrett Co., Athol, Mass., has designed precision gage No. 599 for planer and shaper work. Range with 3-inch extension used on longer measurements is ¼ to 9 inches. Level built into gage aids in setting up work on planer table. Base dimensions are ¾ x 5¼ inches. Extension is ⅝-inch diameter x 3

inches long. Weight is a
ly 25 ounces.

Coupling Tapper

■ The Acme Machinery
St. Clair avenue, Cleve
2-inch 8-spindle coupling



leadscrews. Leadscrew
automatically after coup
been completely tap
chucks are automatica
Quick acting ring socket
erator to unload while
rotating. Speed changes
are obtained by pick-off g

Pedestal Clay Gun

■ Edgar E. Brosius, Inc
burg, Pa., has developed
tal type clay gun which
gether independent of furn

tilted at a predeter-
t proper angle, to hit
xact position. Barrel
of 9 cubic feet. Cast
so tapered that op-
clear view of tapping
mes and can pass un-
work around trough
n hole.

te Shear

achine Co., Etna P.O.,
as built a plate shear
be world's largest for
iet mill. Of cast steel
throughout the ma-
plates to 2½ inches
2 inches wide. Gear
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only flywheel shaft and

running, gear train be-
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ram, is operated by air
so be controlled hydrau-
knife on ram can be
or splitting or slitting
or shearing plates on a
30 degrees, motor-driven
d lowering screws are

g Coating

ayne Chemical Products
Copeland avenue, Detroit,
oduced Spatter-Ex and
both water-soluble com-
prevent bonding of spat-
sh in welding operations.
protects part being weld-
flash or butt welding.
used in resistance welding,
dies and welding holder
n becoming jammed with
d with nonferrous metals
greater heat conductivity

de Remover

ssive Welder Co., 737 Pi-
enue, Detroit, offers a ta-
puller for hydromatic and
spot welders. It has au-
tomatic locking, positive grip and straight-line pulling action. A tap of hammer on bottom of puller removes electrode from holder without damage to welding point seats. Shocks are absorbed largely within puller, affording additional protection to welder.

Open-Back Press

■ Minster Machine Co., Minster, O., offers a line of open back inclinable presses in nine sizes, ranging in capacity from 12 to 113 tons. Frame has box type construction with 45 degree overhanging crankshaft bearings. Brake has constant braking torque. Brake shoe is two-piece assembly, having four segments of oil-proof molded lining and is finned to aid heat radiation. Multi-engage spline clutch has 10 to 22 points of engagement, depending on size.

Heavy Duty Rheostat

■ For adjusting speed of motors in severe service, Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., announces a mill-type field rheostat with 60 point speed control and individual resistance tubes. Entire assembly is in a wall-mounting steel enclosure perforated for ventilation.

Service
IN EVERY SENSE OF THE WORD

In that one simple statement, pump users the country over sum up their experience with DEPENDABLE Roper Rotary Pumps. Some like the Roper SIMPLICITY of design, EASE of installation and LARGE capacity. Others know that they have profited from the LOW original cost, LONG life, LOW operating cost, LOW maintenance cost and TROUBLE-FREE performance. If you are interested in any of these features —write for latest bulletin on Roper Pumps.

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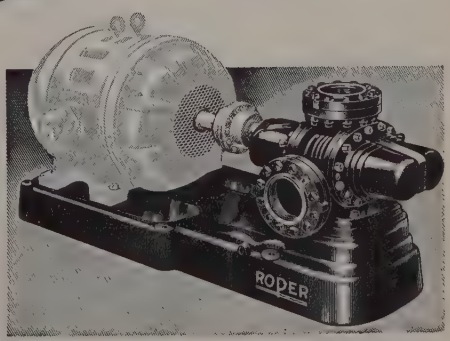

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Automotive Engineers Open World Congress; View Future Progress

■ THAT the automotive industry will make strides over the next 10 years which will far out-distance progress of the past decade was the prediction made by leading engineers who gathered in New York last week from all parts of the world to participate in the opening of the World Automobile Engineering congress, which, following New York, will be held progressively in Indianapolis, May 29-30, Detroit, May 31-June 2, and San Francisco, June 6-8.

This forecast was based on the increasing trend toward closer cooperation and still freer exchange of ideas by automotive engineers of all countries with "real progress knowing no political or international boundaries."

Principal job is to maintain the engineering, or factual approach, said W. J. Davidson, general sales manager, diesel engineering division, General Motors Corp., Detroit, and president of the Society of Automotive Engineers, sponsor of the congress. This approach, he said, consists of getting facts in impartial manner, and then through discussion endeavoring to develop what the facts indicate.

He warned that today the world is influenced too much by emotion, rather than by facts, and declared that it is a cardinal principle with the engineer "never to tear down anything without putting up something equally good in its place."

Congress to Move West

Approximately 4000 automotive engineers, representing 20 different countries, are expected to attend the sessions in the various cities—sessions so timed and arranged as to enable the members to visit the world fairs in New York and San Francisco, attend the 500-mile Memorial day sweepstakes in Indianapolis and visit the many points of interest to automotive engineers in Detroit.

Formal meetings in New York, which began May 22, were concluded at a banquet May 26 at which C. F. Kettering, vice president in charge of research, General Motors Corp., Detroit, spoke on "Engineers' Problems in the World of Tomorrow."

Alfred Reeves, general manager, Automobile Manufacturers' association, New York, predicted that production this year will reach 3,500,000 passenger cars and trucks, and said that the greatest work which still lies ahead of the automotive engineer is to create machines that will serve all the people best at the lowest cost consistent with safety. He emphasized that competition in the automotive industry has been one of quality and not costs, although costs have been declining steadily as quality has advanced. He looks for continued heavy increases in automobile purchases and said that the bureau of public roads is planning highway improvements 20 years ahead in expectation that traffic will be doubled by that time.

Mr. Reeves decried any move toward punitive taxes to equalize transportation costs among different types of carriers and insisted that there should not be any diversion of highway funds.

A stout defense of the machine in its bearing on social and industrial problems was registered by W. A. Cameron, Ford Motor Co., Detroit, speaking on May 23. The attack on the machine, he said, varies, but the most persistent charge and the one enlisting greatest sympathy is that it destroys men's jobs and reduces employment.

Statistics Back Up Contention

He claimed that statistics do not bear out this contention and said it is a fact of still greater importance that working men themselves seldom blame a machine for their unemployment. He quoted an authority to effect that of 3,633,896 persons reporting unemployment in the 1930 census only a total of 10,651 persons, or less than a third of 1 per cent, gave machinery as the reason.

Mr. Cameron said he noted a growing tendency on the part of business spokesmen to concede that in the past machinery has put men out of work. All recognize the dislocation that resulted from the first impact of the "machine age," a dislocation, he asserted, that was speedily remedied by absorption of most of the dislocated workers into new industries.

"But," he said, "it is a question whether our conceding that the machine did the harm is justified. Because if that is true, it is likely to occur again, and I am bold enough to say that it will never occur again however rapidly we advance in automatic machine development."

The reason, in his opinion, is that "men of the present generation, unlike their fathers, are not looking forward to doing the same old things in the same old way for the rest of their lives. There is not a young man in industry today who does not know that change is the keynote of progress. ... again will an America... be taken by surprise as ... generation."

Urges Reform in Pricing Policies

(*Concluded from P...*

prices. It lies entire... steel industry itself.

In this connection the... dition in the industry ... to no good. I refer to ... of announcing price ... ward weeks in advance... fective date, while pr... downward go into effe...

Advance notices f... creases frequently opera... tificial stimulant upo... Buyers rush in or are ... to place tonnage as fa... possible at the currently ... The result is a spurt i... followed by a sharp de... may have serious adve... upon general business ...

In meeting the obliga... public in general, the in... but one test to apply - a... cies in the public interest ...

It is not always easy ... that question. In the ... some there may even b... as to what is the publ... With regard to its own a... lieve that the industry ... test successfully in all r... cept that of earning fair ... pays good wages and ... good labor relations; it m... steel and sells it at fair p...

Interests Are Two

But the steel industry ... an enlightened interest ... affairs. It is no longer p... any industrial executive ... only in terms of his own ... or his own industry. No... nor industry can live in ... Policies of government an... of people are of direct c... industry. By the same ... problems of welfare of in... of direct concern to the g... and to the people.

The steel industry can... to fail in keeping abreast ... ing trend in a changing ... must be ready to adapt ... new conditions and to a... ideas when they appear to... and in accord with the ge... fare. But this does not r... the industry should per... to be stampeded by unfai... supported criticism into ab... principles that are right ... ditions that are sound. I... criticism is contructive an... erations of public interest a... ling that changes should be...

charge end of package low- sections of portable roller carrying items directly to ight car for loading

tions, is employed in a large number of oil refineries to handle barrels, drums and cartons, through filling and storage to the shipping department. These systems often are connected directly to portable gravity roller conveyor sections to deliver items on the loading platform directly in front of the flat car door. In some instances they may even extend inside the freight car when first starting to load the car at an extreme end.

By incorporating variable speed transmissions in the drives of such units, the delivery speed can be varied according to the size and weight of the particular items being loaded. This permits maximum speed of loading operations permitted by the weight and bulk of the packages being handled. Handling equipment described here was built by C. O. Bartlett & Snow Co., Cleveland.

rrels From Old

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is affords extremely rapid f cartons with minimum of handling operations age to shipping.

lso reveals a good view of platforms which interleaf the short roller conveyor o lift and deposit products ain carrying the fingerlike revolves around drive . Also it will be noted, t roller conveyor sections ed at the outer end so they pped up in a position where not engage the finger plat- the lowerator. This per- ibility in operating the ma- he lowerator is started and from a convenient push- ation which can be seen at of the loading platform in

quipment, with few varia-

Steel House Structures Are Investigated

■ "Building Materials and Structures," Report BMS 9, issued by the National bureau of standards is a survey of the structural properties of low-cost steel house constructions. For this test program Insulated Steel Construction Co. submitted 30 specimens representing their Frameless-Steel constructions for walls, partitions, floors and roofs. Specimens were subjected to proper loads — compressive, transverse, concentrated, impact or racking. Three similar specimens were tested for each load. Results are presented graphically and in tables. Publication from Superintendent Of Documents, Washington, D. C., 10 cents.

Streamline Car Builders . . .

SUCH AS
E. G. BUDD MFG. CO.
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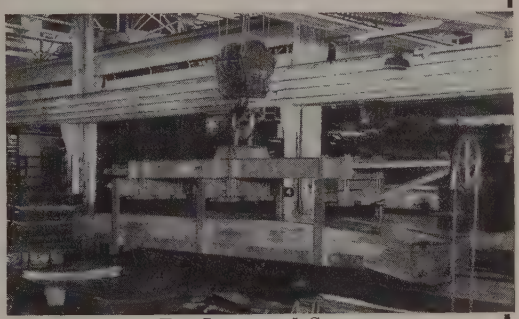
MANSAVER GRABS



For Increased Storage

The Mansaver Grab, shown in the illustration has greatly increased the amount of steel stored in a given space. It has resulted in increased safety and decreased handling costs.

Mansaver Grabs are used by E. G. Budd Manufacturing Company for handling sheets in 20,000-pound unit loads, coils in 20,000-pound unit loads and other materials. Let us show you how similar savings can be made in your plant.

J-B ENGINEERING SALES COMPANY
1743 Orange Street **New Haven, Conn.**

A.S.M. Chapters Meet in East

■ MEMBERS of the Middle Atlantic chapters of the American Society for Metals, including the New York, New Jersey, Penn State, York, Lehigh Valley, Baltimore and Philadelphia chapters, conducted a one-day meeting in Philadelphia, May 19. The program provided a morning technical session, a luncheon, a plant visitation in the afternoon and a dinner in the evening.

H. J. French, International Nickel Co. Inc., New York, presided at the technical session at which Dr. E. C. Bain, assistant to vice president, United States Steel Corp., Pittsburgh, spoke on "Functions of the Several Alloying Elements in Steel," and F. B. Foley, Midvale Co., Philadelphia, recounted the "History of Valley Forge."

G. E. Whitwell, vice president, Philadelphia Electric Co., Philadelphia, addressed the luncheon, after which the visitors were shown the blast furnaces, coke ovens, open hearths, and sheet and plate mills of the Alan Wood Steel Co., Conshohocken, Pa. W. H. Eisenman, national secretary, American Society for Metals, Cleveland, was toastmaster at the dinner, at which Dr. John R. Hart, rector, Washington Memorial chapel, Valley Forge, Pa., spoke.

That additions of small amounts of alloying elements result in profound changes in the structure of steel was the point which Dr. Bain emphasized in his paper. Small amounts of nickel or chrome-molybdenum, for example, increase hardness of steel on quenching over ordinary carbon steel, he said, even where the heat treatments are identical.

Grain Size and Hardenability

Metallurgically speaking, he stated, steel cooled, even though only rolled, is heat treated. However, such steel is not heat treated in a technical sense. Rapid cooling results in finer structure, he asserted, and added that grain size has a definite effect on hardenability but is not the sole factor. Toughness builds up as grain size becomes smaller.

Dr. Bain said that hardenability of carbon steel has been found to increase on successively higher quenching temperatures. Surface conditions also are important. Discussing alloying elements further, Dr. Bain said that practically all elements except cobalt contribute to deep hardening.

In discussion, N. C. Mochel, metallurgist, Westinghouse Electric & Mfg. Co., Philadelphia, noted that Dr. Bain's findings had been obtained from steels with relatively small cross sections. He said that a good many steel users, of course, are interested in heavier sections, but pointed out that the principles set forth by Dr. Bain still apply and thus may be utilized.

A.S.T.M. Program

(*Concluded from Page* 53)

Sam Tour, Lucius Pitkin Inc.

"Service and Life of Nonferrous Tubes in Petroleum Refining," by E. S. Dixon, Texas Co.

Report of committee B-6 on die-cast metals and alloys.

"Magnesium Alloy Die Castings," by A. W. Winston, Dow Chemical Co.

Report of committee B-7 on light metals and alloys, cast and wrought.

Report of committee B-4 on electrical-heating, electrical resistance and electric-furnace alloys.

"Spectral Emissivity of Some Alloys for Electrical Heating Elements," by W. F. Roeser, National bureau of standards.

Report of committee E-2 on spectrographic analysis.

"Spectrographic Analysis of Tin," by J. Warren Stewart, Carnegie Institute of Technology.

Report of committee E-3 on chemical analysis of metals.

"Determination of Silicon in Certain Aluminum Alloys Containing Silicides," by Thomas A. Wright and John Jicha, Lucius Pitkin Inc.

Cemented Carbide Plant

(*Concluded from Page* 45)

around the nib. One 250-ton, and one 50-ton percussion press are, at present, installed for this operation. The process provides complete support for the nib except at the hole through which the wire, bar or tubing passes. Through controlled heat treatments and selection of proper casing steels, the internal pressures set up by the drawing operations for which the dies are used are balanced with external pressure of the casing against the nib. Casings up to 9 inches in outside diameter have been handled on this equipment.

Maintenance and General Facilities

Among the economy features built into this new plant is the special provision for water and metal salvage. A series of covered trenches built into the floor of the plant, direct all drainage water, except that used for sanitary purposes, into a special settling tank. This water is then pumped into a cooling tower and recirculated for use in the air-conditioning system, cleaning, and for general manufacturing purposes. The system also provides for the periodic salvaging of powdered carbides and other metals of value that accumulate as a result of maintenance cleaning.

Apprentice Train

(*Concluded from P*

a good background. Th
never hesitates to call
and explain why his b
chosen.

J. E. Goss, Brown &
Co., Providence, R. I.,
among employes in
company are many rela
perience shows they help
politics.

M. J. Gregory, factor
foundry division, Caterp
Co., Peoria, Ill., present
on "Foundry Apprentic
phasized that no relati
ployed. Over 600 boys a
ing in the machine
shops and in the fo
pointed out that practic
an hourly rate to appr
to ignore the bonus syst

He directed attention
tance of studying every p
foundry industry, pointi
it is now on a scientific
foundries are being opera
ternmakers these days,
It is important for the
to have a knowledge of
as it leaves the machine
he advocated training t
tice so that he is capabl
ing up on the machining
Training men to make m
one part of the foundry i

It is important, Mr. G
plained, that foundrym
what kind of wood to use
patterns, but it is just
tant for him to take a
and draw lines to show
partings and cores are g
located. He should have
edge of chemistry and m
and of core oils. We
molds by machines, the s
serted, but we require bra
up these machines.

Applications Run H

Both apprentice training
man training were consid
second session. Both subj
dealt with in a paper
Leubke, Fairbanks, Mors
Beloit, Wis. Speaking of ap
he pointed out that his
limits training to high sch
ates of good character and
habits who have been reco
by the principal or superi

No difficulty has been
tered, he said, in obtaining
many applications as coul
cepted, and apprentice tr
the long run is profitable
the company and the appr

Discussing a foundrym
proach to foreman trainin
Conner Jr., Walworth Co.,
burg, Pa., outlined a two-y
manship training course op
his company.

w-Price Orders Boost Production

Upturn Accompanied By Slight Improvement In Sentiment

MARKET IN TABLOID ★

Demand
Generally steady; sheet and strip releases awaited.

Prices
Untested in some instances; scrap stronger.

Production
Increased 2½ points to 48 per cent.

RATELY better tone pervades steel mar- the realization by producers that unprofit- s largely is responsible for the quicken- ity.

ng moved up 2½ points last week to 48 rst increase in 12 weeks. In some dis- pturn is attributed more to a general rise than to the recent bulge in low-price or- heets and strip. Nevertheless, the latter n important factor in expanding operations ding areas. Stronger scrap markets ac- e gain in output.

of a large portion of flat-rolled steel booked be deferred until next quarter, consequent- oduction will be supported for an extended his business. New buying will be retarded long, and a test of current prices awaits ion of material now on order.

ion of coal mining is reflected to a cer- in steel plant schedules, principally in bet- ons among blast furnaces and coke ovens. oad shops also have reopened, but the ef- el demand generally is slight.

car inquiries continue scant. Recent loco- ing includes 20 switchers ordered by three ay freight car awards totaled 1000, against pril and 6014 a year ago. Orders to date are 5 per cent ahead of the 1938 period.

ns Today Partly e Those Year Ago

absence of any significant improvement in irements of large consumers, such as rail- ilding construction and the automobile in- covery in steelmaking during the immedi- appears likely to be restricted. Hopes that quent trend will parallel that of last year's df are based partly on the similarity of cer- litions today and a year ago.

production at this time in 1938 was 28.5 Output started to expand early in June, but did not receive the stimulus of lower prices that month. Like today, inventories were this contributed to the steady rise in output ng five months.

ouses have followed mills in establishing lower base prices on sheets, strip and bars. In some districts reductions also embrace plates and shapes.

Producers' quotations are reasonably steady, though partly because there is insufficient new business to test some of them. Concrete reinforcing bar prices remain highly unsettled, particularly in the East. Pig iron producers this week are expected to reaffirm current prices for third quarter.

Body Plant Strike Reduces Auto Output to Year's Low

A body plant strike crippled assemblies of the Chrysler Corp. last week, accounting for practically all the drop of more than 12,000 units in automobile production. The total of 67,740 units compares with 45,120 a year ago. Output by other interests was steady, but this week is expected to see more general curtailment because of extended holiday shutdowns.

Steel releases for production of new models so far are light but will increase shortly, principally from parts companies. Dealer stocks of current models continue ample in relation to retail demand, despite slightly better sales this month, and expectations are for a further reduction in assemblies in June.

Awards of fabricated structural shapes and concrete reinforcing bars recently have held below the average for the year to date. This reflects passing of the peak in contracts for public works and inability of private construction to make up the difference. Substantial tonnages remain to be shipped against old contracts.

Seven districts accounted for last week's rise in steelmaking. Pittsburgh was up 3 points to 36 per cent and Chicago 3½ points to 49. Other increases included 3 points to 45 at Youngstown, 4 points to 54 at Cleveland, 3 points to 59 at Wheeling, 4½ points to 42 at Buffalo and 8 points to 52 at Cincinnati. Detroit was down 2 points to 57. Unchanged centers were eastern Pennsylvania at 37, Birmingham at 57, New England at 45 and St. Louis at 39.

Scrap is stronger at Pittsburgh and Chicago. A small price increase in the latter market boosted the scrap price composite 4 cents to $14. The finished steel composite holds at $55.70.

COMPOSITE MARKET AVERAGES

	May 27	May 20	May 13	One Month Ago Apr., 1939	Three Months Ago Feb., 1939	One Year Ago May, 1938
Iron and Steel	$35.63	$35.63	$35.72	$36.34	$36.37	$38.50
Finished Steel	55.70	55.70	56.10	56.50	56.50	61.70
Steelworks Scrap..	14.00	13.96	14.12	14.64	14.87	11.47

Iron and Steel Composite:—Pig iron, scrap, billets, sheet bars, wire rods, tin plate, wire, sheets, plates, shapes, pipe, rails, alloy steel, hot strip, and cast iron pipe at representative centers. Finished Steel Composite:—Plates, hot strip, nails, tin plate, pipe. Steelworks Scrap Composite:—Heavy melting steel and compressed sheets.

COMPARISON OF PRICES

Representative Market Figures for Current Week; Average for Last Month, Three Months and One Year

Finished Material

	May 27, 1939	April 1939	Feb. 1939	May 1938
Steel bars, Pittsburgh	2.15c	2.25c	2.25c	2.45c
Steel bars, Chicago	2.15	2.25	2.25	2.50
Steel bars, Philadelphia	2.47	2.57	2.57	2.77
Iron bars, Terre Haute, Ind.	2.05	2.15	2.15	2.35
Shapes, Pittsburgh	2.10	2.10	2.10	2.25
Shapes, Philadelphia	2.215	2.215	2.215	2.465
Shapes, Chicago	2.10	2.10	2.10	2.30
Plates, Pittsburgh	2.10	2.10	2.10	2.25
Plates, Philadelphia	2.15	2.15	2.15	2.445
Plates, Chicago	2.10	2.10	2.10	2.30
Sheets, hot-rolled, Pittsburgh	2.00	2.15	2.15	2.40
Sheets, cold-rolled, Pittsburgh	3.05	3.20	3.20	3.45
Sheets, No. 24 galv., Pittsburgh	3.50	3.50	3.50	3.80
Sheets, hot-rolled, Gary	2.00	2.15	2.15	2.50
Sheets, cold-rolled, Gary	3.05	3.20	3.20	3.25
Sheets, No. 24 galv., Gary	3.50	3.50	3.50	3.90
Bright bess., basic wire, Pitts.	2.60	2.60	2.60	2.90
Tin plate, per base box, Pitts.	$5.00	$5.00	$5.00	$5.35
Wire nails, Pittsburgh	2.45	2.45	2.45	2.75

Semifinished Material

Sheet bars, Pittsburgh, Chicago	$34.00	$34.00	$34.00	$37.00
Slabs, Pittsburgh, Chicago	34.00	34.00	34.00	37.00
Rerolling billets, Pittsburgh	34.00	34.00	34.00	37.00
Wire rods, No. 5 to 9/32-inch, Pitts.	43.00	43.00	43.00	47.00

Pig Iron

	May 27, 1939	April 1939
Bessemer, del. Pittsburgh	$22.34	$22.34
Basic, Valley	20.50	20.50
Basic, eastern, del. Philadelphia	22.34	22.34
No. 2 foundry, Pittsburgh	22.21	22.21
No. 2 foundry, Chicago	21.00	21.00
Southern No. 2, Birmingham	17.38	17.38
Southern No. 2, del. Cincinnati	20.89	20.89
No. 2X, del. Phila. (differ. av.)	23.215	23.215
Malleable, Valley	21.00	21.00
Malleable, Chicago	21.00	21.00
Lake Sup., charcoal, del. Chicago	28.34	28.34
Gray forge, del. Pittsburgh	21.17	21.17
Ferromanganese, del. Pittsburgh	85.33	85.33

Scrap

Heavy melting steel, Pittsburgh	$14.25	$15.50
Heavy melt. steel, No. 2, E. Pa.	12.75	13.65
Heavy melting steel, Chicago	12.75	13.35
Rails for rolling, Chicago	17.25	17.25
Railroad steel specialties, Chicago	14.75	15.35

Coke

Connellsville, furnace, ovens	$3.75	$3.75
Connellsville, foundry ovens	5.00	5.00
Chicago, by-product fdry., del.	10.50	10.50

STEEL, IRON, RAW MATERIAL, FUEL AND METALS PRICES

Except when otherwise designated, prices are base, f.o.b. cars.

Sheet Steel

Hot Rolled

Pittsburgh	2.00c
Chicago, Gary	2.00c
Cleveland	2.00c
Detroit, del.	2.00c
Buffalo	2.00c
Sparrows Point, Md.	2.00c
New York, del.	2.24c
Philadelphia, del.	2.17c
Granite City, Ill.	2.10c
Middletown, O.	2.00c
Youngstown, O.	2.00c
Birmingham	2.00c
Pacific Coast points	2.50c

Cold Rolled

Pittsburgh	3.05c
Chicago, Gary	3.05c
Buffalo	3.05c
Cleveland	3.05c
Detroit, delivered	3.15c
Philadelphia, del.	3.37c
New York, del.	3.39c
Granite City, Ill.	3.15c
Middletown, O.	3.05c
Youngstown, O.	3.05c
Pacific Coast points	3.65c

Galvanized No. 24

Pittsburgh	3.50c
Chicago, Gary	3.50c
Buffalo	3.50c
Sparrows Point, Md.	3.50c
Philadelphia, del.	3.67c
New York, delivered	3.74c
Birmingham	3.50c
Granite City, Ill.	3.60c
Middletown, O.	3.50c
Youngstown, O.	3.50c
Pacific Coast points	4.00c

Black Plate, No. 29 and Lighter

Pittsburgh	3.05c
Chicago, Gary	3.05c
Granite City, Ill.	3.15c

Long Ternes No. 24 Unassorted

Pittsburgh, Gary	3.80c
Pacific Coast	4.50c

Enameling Sheets

	No. 10	No. 20
Pittsburgh	2.75c	3.35c
Chicago, Gary	2.75c	3.35c
Granite City, Ill.	2.85c	3.45c
Youngstown, O.	2.75c	3.35c
Cleveland	2.75c	3.35c
Middletown, O.	2.75c	3.35c
Pacific Coast	3.35c	3.95c

Corrosion and Heat-Resistant Alloys

Pittsburgh base, cents per lb.

Chrome-Nickel

	No. 302	No. 304
Bars	24.00	25.00
Plates	27.00	29.00
Sheets	34.00	36.00
Hot strip	21.50	23.50
Cold strip	28.00	30.00

Straight Chromes

	No. 410	No. 430	No. 442	No. 446
Bars	18.50	19.00	22.50	27.50
Plates	21.50	22.00	25.50	30.50
Sheets	26.50	29.00	32.50	36.50
Hot strip	17.00	17.50	23.00	28.00
Cold strip	22.00	22.50	28.50	36.50

Steel Plate

Pittsburgh	2.10c
New York, del.	2.29c
Philadelphia, del.	2.15c
Boston, delivered	2.42c
Buffalo, delivered	2.33c
Chicago or Gary	2.10c
Cleveland	2.10c
Birmingham	2.10c
Coatesville, base	2.10c
Sparrows Point, base	2.10c
Claymont, del.	2.10c
Youngstown	2.10c
Gulf ports	2.45c
Pacific Coast points	2.60c

Steel Floor Plates

Chicago	3.35c
Gulf ports	3.70c
Pacific Coast ports	3.95c
Pittsburgh	3.35c

Standard Shapes

Pittsburgh	2.10c
Philadelphia, del.	2.21½c
New York, del.	2.27c
Boston, delivered	2.41c
Bethlehem	2.10c
Chicago	2.10c
Cleveland, del.	2.30c
Buffalo	
Gulf ports	
Birmingham	
St. Louis, del.	
Pacific Coast points	

Tin and Terne

Tin Plate, Coke

Pittsburgh, Gary, Chicago	
Granite City, Ill.	

Mfg. Terne Plate

Pittsburgh, Gary, Chicago	
Granite City, Ill.	

Bars

Soft Steel

(Base, 3 to 20

Pittsburgh	
Chicago or Gary	
Duluth	
Birmingham	
Cleveland	
Buffalo	
Detroit, delivered	
Philadelphia, del.	
Boston, delivered	
New York, del.	
Gulf ports	
Pacific Coast points	

Rail Steel

(Base, 15 to 50

Pittsburgh	
Chicago or Gary	
Detroit, delivered	
Cleveland	

.....	2.00c
.....	2.00c
.....	2.35c
ints....	2.60c
n Haute...	2.05c
.....	2.37c
ed....3.50-8.00c	
rcing	
raight lengths, distributors	
Buffalo	
Young., Pitts....	2.05c
ed	2.15c
.....	2.40c
rts.....	2.50c
el.	2.22c
raight lengths, distributors	
ury, Chi-, Cleve-	
ngham....	1.90c
ed	2.00c
.....	2.25c
.....	2.35c

ucts

icago-Birm. base	
keg in carloads	
nails	$2.45
nails	$2.45
pound)	
s	3.15c
ples	3.40c
fire, stand-	
gage two-	
d-rod spool	
oint cattle,	
.....	$2.62
e wire....	2.95c
ire.....	3.35c
ncing (base	
n)	67.00
bale ties,	
column)...	56.00

acturing Trade

Cleve. - Chicago-	
(except spring	
wire)	
basic wire..	2.60c
ire	2.65c
.....	3.20c

ass., $2 higher on c and spring wire.

ls

ttsburgh.....$3.60

ished Bars

Carbon	Alloy
... 2.65c	3.35c
... 2.65c	3.35c
... 2.65c	3.35c
... 2.70c	*3.45c
.... 2.65c	3.35c
.... 2.65c	3.35c

rs (Hot)

, 3 to 25 tons)

Buffalo, Chi-	
ssillon, Can-	
lehem	2.70c
ivered	2.80c

Alloy	
iff. S.A.E.	Diff.
35 3100.....	0.70
.75 3200.....	1.35
.55 3300.....	3.80
.25 3400.....	3.20
e 0.25 Mo.....	0.55
o 0.30 Mo. 1.50-	
.....	1.10
10 Cr.	0.45
ring flats	0.15
.....	1.20
flats.....	0.85
.....	1.50
n.	0.85
flats	0.15
rounds, squares	0.40

Furnace up 50 cents.

Strip and Hoops

(Base, hot-rolled, 1 to 20 tons; cold-rolled, 3 to 25 tons)

Hot Strip, 12-inch and less

Pittsburgh, Chicago, Gary, Cleveland, Youngstown, Middletown, Birmingham....	2.00c
Detroit, del.	2.10c
Philadelphia, del.	2.32c
New York, del.	2.36c
Cooperage hoop, Youngs., Pitts.; Chicago, Birm.	2.10c
Cold strip, 0.25 carbon and under, Pittsburgh, Cleveland, Youngstown	2.80c
Chicago	2.90c
Detroit, del.	2.90c
Worcester, Mass.	3.00c

Carbon	Cleve.,	Pitts.
0.26—0.50.....		2.80c
0.51—0.75.....		4.30c
0.76—1.00.....		6.15c
Over 1.00.....		8.35c

Worcester, Mass $4 higher.

Commodity Cold-Rolled Strip

Pitts.-Cleve.-Youngstown	2.95c
Detroit, del.	3.05c
Worcester, Mass.	3.35c

Lamp stock up 10 cents.

Rails, Fastenings

(Gross Tons)

Standard rails, mill.....	$40.00
Relay rails, Pittsburgh 20—100 lbs. 32.50-35.50	
Light rails, billet qual., Pitts., Chicago, B'ham.	$40.00
Do., rerolling quality..	39.00

Cents per pound

Angle bars, billet, mills.	2.70c
Do., axle steel	2.35c
Spikes, R. R. base	3.00c
Track bolts, base	4.15c
Car axles forged, Pitts., Chicago, Birmingham.	3.15c
Tie plates, base	2.15c

Base, light rails 25 to 60 lbs., 20 lbs., up $2; 16 lbs. up $4; 12 lbs. up $8; 8 lbs. up $10. Base railroad spikes 200 kegs or more; base plates 20 tons.

Bolts and Nuts

Pittsburgh, Cleveland, Birmingham, Chicago. Discounts to legitimate trade as per Dec. 1, 1932, lists, carloads 5% up; full containers additional 10%.

Carriage and Machine

½ x 6 and smaller.....68.5 off	
Do. larger, to 1-in.....66 off	
Do. 1⅛ and larger.....64 off	
Tire bolts .....52.5 off	

Stove Bolts

In packages with nuts attached 72.5 off; in packages with nuts separate 72.5-12½ off; bulk 84 off on 15,000 of 3-inch and shorter, or 5000 over 3-in.

Step bolts .....60 off	
Elevator bolts .....60 off	
Plow bolts .....68.5 off	

Nuts

	U.S.S.	S.A.E.
Semifinished hex.		
6-inch and less..	67	70
⅞—1-inch	64	65
1⅛ and larger..	62	62

Hexagon Cap Screws

Upset, 1-in., smaller.....67.5 off

Square Head Set Screws

Upset, 1-in., smaller.....75.0 off	
Headless set screws.....70.0 off	

Piling

Pitts., Chgo., Buffalo....	2.40c
Gulf ports	2.75c

Rivets, Washers

Structural, Pittsburgh, Cleveland, Chicago ...	3.40c
⅞-inch and smaller, Pitts., Chi., Cleve....65-10 off	
Wrought washers, Pitts., Chi., Phila., to jobbers and large nut, bolt mfrs. l.c.l. $5.40; c.l. $5.75 off	

Welded Iron, Steel Pipe

Base discounts on steel pipe. Pitts., Lorain, O., to consumers in carloads. Gary, Ind., 2 points less on lap weld, 1 point less on butt weld. Chicago delivery 2½ and 1½ less, respectively. Wrought pipe, Pittsburgh base.

Butt Weld

Steel

In.	Blk.	Galv.
½	63½	54
¾	66½	58
1—3	68½	60½

Iron

¾	30	13
1—1¼	34	19
1½	38	21½
2	37½	21

Lap Weld

Steel

2	61	52½
2½—3	64	55½
3½—6	66	57½
7 and 8	65	55½
9 and 10	64½	55
11 and 12	63½	54

Iron

2	30½	15
2½—3½	31½	17½
4	33½	21
4½—8	32½	20
9—12	28½	15

Line Pipe

Steel

1 to 3, butt weld	67½
2, lap weld	60
2½ to 3, lap weld	63
3½ to 6, lap weld	65
7 and 8, lap weld	64
10-inch lap weld	63½
12-inch, lap weld	62½

Iron

	Blk.	Galv.
¾ butt weld	25	7
1 and 1¼ butt weld	29	13
1½ butt weld	33	15½
2 butt weld	32½	15
1½ lap weld	23½	7
2 lap weld	25½	9
2½ to 3½ lap weld	26½	11½
4 lap weld	28½	15
4½ to 8 lap weld..	27½	14
9 to 12 lap weld...	23½	9

Boiler Tubes

Carloads minimum wall seamless steel boiler tubes, cut lengths 4 to 24 feet; f.o.b. Pittsburgh, base price per 100 feet subject to usual extras.

Lap Welded

Sizes	Gage	Steel	Charcoal Iron
1½" O. D.	13	$ 9.72	$23.71
1¾" O. D.	13	11.06	22.93
2" O. D.	13	12.38	19.35
2¼" O. D.	13	13.79	21.68
2½" O. D.	12	15.16	.....
2½" O. D.	12	16.58	26.57
2¾" O. D.	12	17.54	29.00
3" O. D.	12	18.35	31.36
3½" O. D.	11	23.15	39.81
4" O. D.	10	28.66	49.90
5" O. D.	9	44.25	73.93
6" O. D.	7	68.14	.....

Seamless

Sizes	Gage	Hot Rolled	Cold Drawn
1" O. D.	13	$ 7.82	$ 9.01
1¼" O. D.	13	9.26	10.67
1½" O. D.	13	10.23	11.79
1¾" O. D.	13	11.64	13.42
2" O. D.	13	13.04	15.03
2¼" O. D.	13	14.54	16.76
2¼" O. D.	12	16.01	18.45
2½" O. D.	12	17.54	20.21
2¾" O. D.	12	18.59	21.42
3" O. D.	12	19.50	22.48
3½" O. D.	11	24.62	28.37
4" O. D.	10	30.54	35.20
4½" O. D.	10	37.35	43.04
5" O. D.	9	46.87	54.01
6" O. D.	7	71.96	82.93

Cast Iron Pipe

Class B Pipe—Per Net Ton

6-in., & over, Birm..	$42.00-43.00
4-in., Birmingham..	45.00-46.00
4-in., Chicago.....	53.80-54.80
6-in. & over, Chicago	50.80-51.80
6-in. & over, east fdy.	46.00
Do., 4-in.	49.00

Class A Pipe $3 over Class B Stnd. fitgs., Birm., base $100.00

Semifinished Steel

Rerolling Billets, Slabs

(Gross Tons)

Pittsburgh, Chicago, Gary, Cleve., Buffalo, Young., Birm., Sparrows Point..	$34.00
Duluth (billets)	36.00
Detroit, delivered	36.00

Forging Quality Billets

Pitts., Chi., Gary, Cleve., Young., Buffalo, Birm..	40.00
Duluth	42.00

Sheet Bars

Pitts., Cleveland, Young., Sparrows Point, Buffalo, Canton, Chicago..	34.00
Detroit, delivered	36.00

Wire Rods

Pitts., Cleveland, Chicago, Birmingham No. 5 to ⅜-inch incl.	43.00
Do., over ⅜ to 41/64-in. incl.	48.00

Worcester up $2; Galveston up $6; Pacific Coast up $9.

Skelp

Pitts., Chi., Young., Buff., Coatesville, Sparrows Pt.	1.90c

Coke

Price Per Net Ton

Beehive Ovens

Connellsville, fur...	$3.75
Connellsville, fdry..	4.75- 5.50
Connell. prem. fdry.	5.75- 6.25
New River fdry....	6.50- 6.75
Wise county fdry...	5.50- 5.75
Wise county fur....	4.50- 4.75

By-Product Foundry

Newark, N. J., del...	10.88-11.35
Chi., ov., outside del.	9.75
Chicago, del.	10.50
Terre Haute, del. ..	10.00
Milwaukee, ovens..	10.50
New England, del...	12.50
St. Louis, del.	11.00-11.50
Birmingham, ovens.	7.00
Indianapolis, del....	10.00
Cincinnati, del.....	9.75
Cleveland, del.....	10.30
Buffalo, del.	10.50
Detroit, del.	10.25
Philadelphia, del...	10.65

Coke By-Products

Spot, gal., freight allowed east of Omaha

Pure and 90% benzol...	16.00c
Toluol, two degree.....	22.00c
Solvent naphtha	26.00c
Industrial xylol	26.00c

Per lb. f.o.b. Frankford and St. Louis

Phenol (200 lb. drums)	16.25c
Do. (450 lbs.)	15.25c

Eastern Plants, per lb.

Naphthalene flakes, balls, bbls. to jobbers	5.75c
Per ton, bulk, f.o.b. port	
Sulphate of ammonia....$28.00	

Pig Iron

Delivered prices include switching charges only as noted. No. 2 foundry is 1.75-2.25 sil.; 25c diff. for each 0.25 sil. above 2.25 sil.; 50c diff. below 1.75 sil. Gross tons.

Basing Points:	No. 2 Fdry.	Malleable	Basic	Bessemer
Bethlehem, Pa.	$22.00	$22.50	$21.50	$23.00
Birdsboro, Pa.	22.00	22.50	21.50	23.00
Birmingham, Ala.‡	17.38	.....	16.38	22.00
Buffalo	21.00	21.50	20.00	22.00
Chicago	21.00	21.00	20.50	21.50
Cleveland	21.00	21.00	20.50	21.50
Detroit	21.00	21.00	20.50	21.50
Duluth	21.50	21.50	.....	22.00
Erie, Pa.	21.00	21.50	20.50	22.00
Everett, Mass.	22.00	22.50	21.50	23.00
Granite City, Ill.	21.00	21.00	20.50	21.50
Hamilton, O.	21.00	21.00	20.50	.....
Neville Island, Pa.	21.00	21.00	20.50	21.50
Provo, Utah	19.00	.....	.....	.....
Sharpsville, Pa.	21.00	21.00	20.50	21.50
Sparrow's Point, Md.	22.00	.....	21.50	.....
Swedeland, Pa.	22.00	22.50	21.50	23.00
Toledo, O.	21.00	21.00	20.50	21.50
Youngstown, O.	21.00	21.00	20.50	21.50

‡Subject to 38 cents deduction for 0.70 per cent phosphorus or higher.

Delivered from Basing Points:				
Akron, O., from Cleveland	22.39	22.39	21.89	22.89
Baltimore from Birmingham	22.78	.....	21.66	.....
Boston from Birmingham	22.12	.....	.....	.....
Boston from Everett, Mass.	22.50	23.00	22.00	23.50
Boston from Buffalo	22.50	23.00	22.00	23.50
Brooklyn, N. Y., from Bethlehem	24.50	25.00	.....	.....
Canton, O., from Cleveland	22.39	22.39	21.89	22.89
Chicago from Birminghom	†21.22	.....	.....	.....
Cincinnati from Hamilton, O.	21.24	22.11	21.61	.....
Cincinnati from Birmingham	21.06	.....	20.06	.....
Cleveland from Birmingham	21.32	.....	20.82	.....
Mansfield, O., from Toledo, O.	22.94	22.94	22.44	22.44
Milwaukee from Chicago	22.10	22.10	21.60	22.60
Muskegon, Mich., from Chicago, Toledo or Detroit	24.19	24.19	23.69	24.69
Newark, N. J., from Birmingham	23.15	.....	.....	.....
Newark, N. J., from Bethlehem	23.53	24.03	.....	.....
Philadelphia from Birmingham	22.46	.....	21.96	.....
Philadelphia from Swedeland, Pa.	22.84	23.34	22.34	.....
Pittsburgh district from Neville Island	{Neville base, plus 69c, 84c, and $1.24 freight.			
Saginaw, Mich., from Detroit	23.45	23.45	22.95	22.95

	No. 2 Fdry.	Malleable
St. Louis, northern	21.50	21.50
St. Louis from Birmingham	†21.12	
St. Paul from Duluth	23.63	23.63

†Over 0.70 phos.

Low Phos.

Basing Points: Birdsboro and Steelton, Pa., and S $26.50, base; $27.74 delivered Philadelp

Gray Forge

Valley furnace $20.50
Pitts. dist. fur. 20.50

Charco

Lake Superior fur
do., del Chica
Lyles, Tenn. ...

†Silvery

Jackson county, O., base: 6-6.50 per cent $25.50; 7-7.50—$26.50; 7.51-8—$27.00; 8-8.50—$27.50; 9-9.50—$28.50; Buffalo, $1.25 higher.

Bessemer Ferrosilicon†

Jackson county, O., base; Prices are the same as plus $1 a ton.

†The lower all-rail delivered price from Jackson, C is quoted with freight allowed.

Manganese differentials in silvery iron and ferrosili $1 per ton add. Each unit over 3%, add $1 per

Refractories

Per 1000 f.o.b. Works, Net Prices

Fire Clay Brick

Super Quality

Pa., Mo., Ky. $60.80

First Quality

Pa., Ill., Md., Mo., Ky... 47.50
Alabama, Georgia..... 47.50
New Jersey 52.50

Second Quality

Pa., Ill., Ky., Md., Mo... 42.75
Georgia, Alabama 34.20
New Jersey 49.00

Ohio

First quality 39.90
Intermediate 36.10
Second quality 31.35

Malleable Bung Brick

All bases $56.05

Silica Brick

Pennsylvania $47.50
Joliet, E. Chicago..... 55.10
Birmingham, Ala. 47.50

Ladle Brick

(Pa., O., W. Va., Mo.)

Dry press $28.00
Wire cut $26.00

Magnes

Imported dead - b grains, net ton Chester, Pa., an timore bases (b
Do. domestic ....
Do., f.o.b. Che
Wash., net ton, b net ton, bags
Quickset magn grains, f.o.b. C lah, Wash., net.

Basic Br

Net ton, f.o.b. Ba mouth Meeting,

Chrome brick ...
Chem. bonded chro
Magnesite brick
Chem. bonded mag

Fluorspar, 8

Washed gravel, paid, tide, net t
Washed gravel, f.o. Ky., net ton, car all rail.....
Do. barge .....
No. 2 lump.....

Ferroalloy Prices

Ferromanganese, 78-82%, tidewater, duty pd.... $80.00
Do., del. Pittsburgh... 85.33

Spiegeleisen, 19-21% dom. Palmerton, Pa., spot.. 28.00
Do., 26-28%, Palmerton 33.00

Ferrosilicon, 50% freight allowed, c.l. 69.50
Do., ton lot 80.50
Do., 75 per cent..... 126.00
Spot, $5 a ton higher.

Silicoman, 2½ carbon.. 88.00
2% carbon, 93.00; 1%, 103.00
Contract ton price $11 higher; spot $5 over contract.

Ferrotungsten, stand., lb. con. del. cars 1.60-1.65

Ferrovanadium, 35 to 40%, lb., cont...2.70-2.80-2.90

Ferrophosphorus, gr. ton, c.l., 17-18% Rockdale, Tenn., basis, 18%, $3 unitage, 58.50; electrolytic, per ton, c. l., 23-26% f.o.b. Monsanto, Tenn., 24% $3 unitage 75.00

Ferrochrome, 66-70 chromium, 4-6 carbon, cts. lb., contained cr., del. carlots 10.50c
Do., ton lots 11.25c
Do., less-ton lots 11.50c

67-72% carloads, 2% carbon, per lb. contained chrome 16.50c
Do., ton lots 17.25c
Do., less-ton lots 17.75c

	Carloads	Ton lots	Less ton
2% carb..	16.50c	17.25c	17.50c
1% carb...	17.50c	18.25c	18.50c
0.10% carb.	18.50c	19.25c	19.50c
0.20% carb.	19.50c	20.25c	20.50c

Spot ¼c higher

Ferromolybdenum, 55-65% molyb. cont., f.o.b. mill, lb. 0.95

Calcium molybdate, lb. molyb. cont., f.o.b. mill 0.80

Ferrotitanium, 40-45%, lb., con. ti., f.o.b. Niagara Falls, ton lots... $1.23
Do., less-ton lots 1.25
20-25% carbon, 0.10 max., ton lots, lb.... 1.35
Do, less-ton lots..... 1.40
Spot 5c higher

Ferrocolumbium, 50-60%, contract, lb. con. col., f.o.b. Niagara Falls... $2.25
Do, less-ton lots 2.30
Spot is 10c higher

Technical molybdenum trioxide, 53 to 60% molybdenum, lb. molyb. cont., f.o.b. mill.... 0.80

Ferro-carbon-titanium, 15-18%, ti., 6-8% carb., carlots, contr., net ton.$142.50
Do, spot 145.00
Do, contract, ton lots 145.00
Do, spot, ton lots.... 150.00

15-18% ti., 3-5% carbon, carlots, contr., net ton 157.50
Do, spot 160.00
Do, contract, ton lots. 160.00
Do, spot, ton lots..... 165.00

Alsifer, contract carlots, f.o.b. Niagara Falls, lb. 7.50c
Do, ton lots 8.00c
Do, less-ton lots 8.50c
Spot ½c lb. higher

Chromium Briquets, contract, any quantity, freight allowed, lb.... 7.25c
Do, spot carlots, bulk 7.50c
Do, ton lots 8.00c
Do., less-ton lots..... 8.25c

Tungsten Metal Powder, according to grade, spot shipment, 200-lb. drum lots, lb..... $2.00
Do, smaller lots..... 2.10

Vanadium Pentoxide, contract, lb. contained $1.10
Do, spot 1.15

Chromium Metal, 98% cr., 0.50 carbon max., contract, lb. con. chrome 80.00c
Do, spot 85.00c
88% chrome, contract... 79.00c
Do, spot 84.00c

Silicon Metal, 1% iron, contract, carlots, ⅛-in., lb. .....
Do, 2% .....
Spot ¼c hi

Silicon Briquets, co carloads freight lowed, ton .....
Carload, spot ..
Less-ton lots, lb.

Manganese Briqu contract carlo bulk freight all lb. .....
Ton lots .....
Less-ton lots ...
Spot ¼c hi

Zirconium Alloy, 12- contract, car gross ton .....
Do, spot .....
34-40%, contract, loads, lb., alloy..
Do, ton lots .....
Do, less-ton lots..
Spot ¼c hig

Molybdenum Pow 99%, f.o.b. York, 200-lb. kegs, lb. ...
Do, 100-200 lb. lo
Do, under 100-lb.

Molybdenum O Briquets, 48-52% lybdenum, per po contained, f.o.b. ducers' plant .....

WAREHOUSE STEEL PRICES

Base Prices in Cents Per Pound, Delivered Locally, Subject to Prevailing Differentials

	Soft Bars	Bands	Hoops	Plates ¼-in. & Over	Structural Shapes	Floor Plates	Sheets Hot Rolled	Sheets Cold Rolled	Sheets Galv. No. 24
.....	3.88	4.06	5.06	3.85	3.85	5.66	3.71	4.78	4.61
opolitan)...	3.84	3.96	3.96	3.76	3.75	5.56	3.58	4.60	4.50
.....	3.60	3.60	4.10	3.40	3.40	5.00	3.40	....	4.43
.....	3.80	3.95	4.35	3.65	3.65	5.00	3.70	5.05	4.30
.....	4.00	4.15	....	3.85	3.85	5.20	3.90	....	5.40
.....	3.35	3.82	3.82	3.62	3.40	5.25	3.35	4.40	4.40
.....	3.25	3.60	3.60	3.40	3.40	5.00	3.35	4.45	4.50
.....	3.25	3.50	3.50	3.40	3.58	5.18	3.35	4.55	4.62
.....	3.33	3.43	3.68	3.60	3.65	5.27	3.43	4.50	4.59
.....	3.60	3.67	3.67	3.65	3.68	5.28	3.42	....	4.57
.....	3.50	3.75	3.75	3.55	3.55	5.15	3.35	4.30	4.25
.....	3.75	3.85	3.85	3.80	3.80	5.40	3.60	4.95	4.50
.....	3.73	3.88	3.88	3.68	3.68	5.28	3.63	4.58	4.63
.....	3.62	3.72	3.72	3.47	3.47	5.07	3.38	3.32	4.53
.....	4.15	4.30	4.30	4.10	4.10	5.70	4.10	....	4.75
.....	4.00	4.15	4.15	3.95	3.95	5.71	3.90	....	5.25
.....	3.90	4.05	4.05	3.85	3.85	5.80	3.80	....	4.40
.....	4.54	4.64	4.64	4.41	4.41	6.01	4.32	....	5.29
la.	3.50	3.65	3.65	3.45	3.45	5.83	3.40	....	4.75
.....	3.85	4.65	4.65	3.80	3.80	5.75	4.10	....	4.60
.....	3.50	5.85	6.25	4.05	4.05	5.65	3.95	....	5.25
.....	3.65	3.85	5.20	3.40	3.50	5.25	3.95	....	4.75
.....	4.00	4.40	6.10	4.00	4.00	5.50	3.95	6.50	4.75
.....	4.00	4.50	6.35	4.00	4.00	6.20	4.20	6.30	4.75
.....	3.65	4.05	6.00	3.60	3.60	5.20	3.60	6.40	5.15

	Cold Rolled Strip	Cold Finished Bars	SAE Hot-rolled Bars (Unannealed) 1035-1050	2300 Series	3100 Series	4100 Series	6100 Series	SAE Cold Drawn Bars 2300	SAE Cold Drawn Bars 3100
.....	3.46	4.13	4.18	7.50	6.05	5.80	7.90	8.63	7.23
.....	3.51	4.09	4.14	7.50	6.10	5.85	....	8.69	7.29
.....	3.66	4.06	3.85	7.46	6.06	5.81	8.71	....	....
.....	....	4.10	3.95	....	....	....	....	....	....
.....	....	4.20	....	....	....	....	....	....	....
.....	3.42	3.75	3.75	7.10	5.65	5.40	8.50	8.15	6.75
.....	3.35	3.65	3.80	7.35	5.95	5.70	7.75	8.35	6.95
.....	3.20	3.75	3.30	7.30	5.85	5.85	7.70	8.15	6.75
.....	3.40	3.80	3.38	7.42	5.97	5.72	7.19	8.45	7.05
.....	3.45	4.00	3.65	7.44	5.99	5.74	8.84	8.50	7.10
.....	3.65	3.75	3.80	7.25	5.85	5.60	7.65	8.25	6.85
.....	....	4.34	3.90	7.45	6.00	8.59	9.19	8.84	7.44
.....	....	3.93	3.93	7.48	6.08	5.83	7.88	8.48	7.08
.....	3.76	4.02	3.92	7.62	6.22	5.97	8.02	8.62	7.22
.....	4.46	4.60	....	....	....	....	....	....	....
.....	...	4.36	....	....	....	....	....	....	....
.....	....	4.44	....	....	....	....	....	....	....
.....	....	4.79	....	....	....	....	....	....	....
Ala.	.	4.48	....	.	....	...	....	....	....
.....	5.00	5.10	....	....	....	....	....	....	....
.....	....	5.60	5.65	....	7.80	7.65	8.45	....	....
g.	....	5.60	6.10	9.00	8.00	7.85	8.70	....	....
.....	4.45	6.00	4.65	9.40	8.55	8.40	9.05	10.40	9.55
o	*9.30	6.55	5.20	9.65	8.80	8.65	9.30	10.65	9.80

n minimum quantity.

CURRENT IRON AND STEEL PRICES OF EUROPE

Dollars at Rates of Exchange, May 25

ices f. o. b. Port of Dispatch—

By Cable or Radio

	British gross tons U. K. ports £ s d	Quoted in dollars at current value	Continental Channe or North Sea ports, gross tons **Quoted in gold pounds sterling £ s d
00 Si...	$23.40 5 0 0	$18.32	2 3 0
.....	.....	17.15	2 0 3
.03-.05	26.91 5 15 0*	.....	.....
.....	$34.52 7 7 6	$38.34	4 10 0
gage..	53.24 11 7 6	42.60	5 0 0
.....	$44 46 9 10 0	$48.99	5 15 0
.....	2.30c 11 0 0	1.95c to 1.98c	5 2 6 to 5 4 0
s.....	2.09c 10 0 0	1.76c to 1.85c	4 12 6 to 4 17 6
r 5 mm.	2.29c 10 18 9	2.14c to 2.33c	5 12 6 to 6 2 6
24 gage			
.....	2.72c 13 0 0	2.95c	7 15 0*
ra., corr.	3.29c 15 15 0	3.52c	9 5 0
os.	2.77c 13 5 0	1.95c to 2.00c	5 2 6 to 5 5 0
.....	4.08c 19 10 0	2.33c to 2.76c	6 2 6 to 7 5 0
, base..	4.86c 23 5 0	2.99c to 3.09c	7 17 6 to 8 2 6
.....	.....	2.66c to 2.85c	7 0 0 to 7 10 0
108 lbs.	$ 4.74 1 0 3	....	.....

nanganese $80.00 delivered Atlantic seaboard duty-paid.

Domestic Prices at Works or Furnace—

Last Reported

	£ s d		French Francs		Belgian Francs		Reich Mark	
Fdy. pig iron, Si..2.5	$23.17	4 19 0(a)	$16.61	626.75	$17.00	500	$25.28	63
Basic bess. pig iron..	21.65	4 12 6(a)	.....	....	.....	...	27.89 (b)	69.50
Furnace coke.....	5.38	1 4 2	5.96	225	6.87	202	7.62	19
Billets.....	34.52	7 7 6	25.04	945	29.24	860	38.73	96.50
Standard rails.....	1.99c	9 10 0	1.56c	1,300	2.06c	1,375	2.38c	132
Merchant bars.....	2.42c	11 12 0††	1.44c	1,202	1.65c	1,100	1.98c	110
Structural shapes...	2.17c	10 8 0††	1.41c	1,173	1.65c	1,100	1.93c	107
Plates, †¼-in. or 5 mm.....	2.29c	10 19 3††	1.82c	1,515	2.06c	1,375	2.29c	127
Sheets, black.....	3.08c	14 15 0§	2.17c	1,805‡	2.36c	1,575‡	2.59c	144‡
Sheets, galv., corr., 24 ga. or 0.5 mm....	3.61c	17 5 0	3.30c	2,750	4.13c	2,750	6.66c	370
Plain wire.....	4.08c	19 10 0	1.74c	1,450	2.48c	1,650	3.11c	173
Bands and strips...	2.58c	12 7 0††	1.61c	1,340	1.95c	1,300	2.29c	127

*Basic. †British ship-plates. Continental, bridge plates. §24 ga. ‡1 to 3 mm. basic price. British quotations are for basic open-hearth steel. Continent usually for basic-bessemer steel. (a) del. Middlesbrough. 5s rebate to approved customers. (b) hematite. °Close annealed. ††Rebate of 15s on certain conditions.

**Gold pound sterling carries a premium of 75 per cent over paper sterling.

IRON AND STEEL SCRAP PRICES

Corrected to Friday night. Grosstons delivered to consumers, except where otherwise stated; †indicates brokers

HEAVY MELTING STEEL

Birmingham, No. 1.	†12.00
Bos. dock No. 1 exp.	13.75-14.00
New Eng. del. No. 1	14.00
Buffalo, No. 1, R. R.	13.50-14.00
Buffalo, No. 1	13.00-13.50
Buffalo, No. 2	11.00-11.50
Chicago, No. 1	12.50-13.00
Chicago, auto, no alloy	11.25-11.75
Chicago, No. 2 auto	10.50-11.00
Cincinnati, dealers	10.50-11.00
Cleveland, No. 1	13.75-14.25
Cleveland, No. 2	12.50-13.00
Detroit, No. 1	9.00- 9.50
Detroit, No. 2	8.50- 9.00
Eastern Pa., No. 1	15.00-15.50
Eastern Pa., No. 2	12.50-13.00
Federal, Ill.	11.50-12.00
Granite City, R. R.	11.50-12.00
Granite City, No. 2	10.50-11.00
Los Angeles, No. 1	12.50-13.50
Los Angeles, No. 2	11.00-11.50
N. Y. dock No. 1 exp.	12.00-12.50
Pitts., No. 1 (R. R.)	15.50-16.00
Pittsburgh, No. 1	14.00-14.50
Pittsburgh, No. 2	12.50-13.00
St. Louis, R. R.	12.00-12.50
St. Louis, No. 2	10.50-11.00
San Francisco, No. 1	13.00-13.50
Seattle, No. 1	11.00-12.00
Toronto, dlrs. No. 1.	9.25- 9.75
Valleys, No. 1	15.00-15.50

COMPRESSED SHEETS

Buffalo	11.00-11.50
Chicago, factory	12.00-12.50
Chicago, dealers	10.75-11.25
Cincinnati dealers	10.00-10.50
Cleveland	13.75-14.25
Detroit	10.25-10.75
E. Pa., new mat.	15.00-15.50
E. Pa., old mat.	11.00-11.50
Los Angeles	12.50-13.00
Pittsburgh	14.00-14.50
St. Louis	9.50-10.00
Valleys	14.00-14.50

BUNDLED SHEETS

Buffalo, No. 1	11.00-11.50
Buffalo, No. 2	10.00-10.50
Cleveland	9.50-10.00
Los Angeles	14.00
Pittsburgh	12.50-13.00
St. Louis	7.00- 7.50
Toronto, dealers	8.00- 8.50

SHEET CLIPPINGS, LOOSE

Chicago	8.00- 8.50
Cincinnati, dealers	6.00- 6.50
Detroit	7.00- 7.50
†Los Angeles	3.75- 4.00
St. Louis	6.00- 6.50
Toronto, dealers	4.25- 4.75

BUSHELING

Buffalo, No. 1	11.00-11.50
Chicago, No. 1	11.25-11.75
Cincin., No. 1, deal.	7.00- 7.50
Cincinnati, No. 2	1.75- 2.25
Cleveland, No. 2	7.50- 8.00
Detroit, No. 1, new.	9.50-10.00
Valleys, new, No. 1.	14.00-14.50
Toronto, dealers	3.75- 4.25

MACHINE TURNINGS (Long)

Birmingham	†4.50- 5.00
Buffalo	6.00- 6.50
Chicago	6.50- 7.00
Cincinnati, dealers	4.00- 4.50
Cleveland	7.00- 7.50
Detroit	4.25- 4.75
Eastern Pa.	8.50
Los Angeles	4.50- 5.00
New York	†3.50- 4.00
Pittsburgh	8.00- 8.50
St. Louis	3.50- 4.00
Toronto, dealers	4.25- 4.75
Valleys	9.00- 9.50

SHOVELING TURNINGS

Buffalo	7.25- 7.75
Cleveland	7.50- 8.00
Chicago	7.50- 8.00
Detroit	5.25- 5.75
Pitts., alloy-free	9.50-10.00

BORINGS AND TURNINGS

For Blast Furnace Use

Boston district	2.00
Buffalo	6.75- 7.25
Cincinnati, dealers	2.75- 3.25
Cleveland	7.50- 8.00
Eastern Pa.	6.50- 7.00
Detroit	4.75- 5.25
New York	†2.50- 3.00
Pittsburgh	7.50- 8.00
Toronto, dealers	3.50- 4.00

AXLE TURNINGS

Boston district	†7.50
Buffalo	9.50-10.00
Chicago, elec. fur.	12.50-13.00
East. Pa., elec. fur.	13.00-13.50
St. Louis	9.00- 9.50
Toronto	4.00- 4.25

CAST IRON BORINGS

Birmingham	†6.00- 6.50
Boston dist. chem.	†4.50
Buffalo	6.75- 7.25
Chicago	6.25- 6.75
Cincinnati, dealers	2.75- 3.25
Cleveland	7.50- 8.00
Detroit	4.75- 5.25
E. Pa., chemical	10.00-11.00
New York	†3.50- 4.00
St. Louis	2.50- 3.00
Toronto, dealers	3.75- 4.25

RAILROAD SPECIALTIES

Chicago	14.50-15.00

ANGLE BARS—STEEL

Chicago	15.00-15.50
St. Louis	13.00-13.50

SPRINGS

Buffalo	15.50-16.00
Chicago, coil	15.50-16.00
Chicago, leaf	14.50-15.00
Eastern Pa.	17.00-17.50
Pittsburgh	17.00-17.50
St. Louis	14.00-14.50

STEEL RAILS, SHORT

Birmingham	†12.00-12.50
Buffalo	16.50-17.00
Chicago (3 ft.)	15.50-16.00
Chicago (2 ft.)	16.00-16.50
Cincinnati, dealers	16.25-16.75
Detroit	16.00-16.50
Los Angeles	15.00-15.50
Pitts., 3 ft. and less	18.00-18.50
St. Louis, 2 ft. & less	16.25-16.75

STEEL RAILS, SCRAP

Boston district	†13.50-14.00
Buffalo	15.50-16.00
Chicago	13.00-13.50
Cleveland	16.00-16.50
Pittsburgh	15.50-16.00
St. Louis	13.00-13.50
Seattle	16.00

FROGS, SWITCHES

Chicago	12.50-13.00
St. Louis, cut	13.00-13.50

ARCH BARS, TRANSOMS

St. Louis	13.50-14.00

PIPE AND FLUES

Chicago, net	7.50- 8.00
Cincinnati, dealers	6.00- 6.50

RAILROAD GRATE BARS

Buffalo	9.00- 9.50
Chicago, net	7.50- 8.00
Cincinnati, dealers	5.75- 6.25
Eastern Pa.	12.50
New York	†8.50- 9.00
St. Louis	8.00- 8.50

RAILROAD WROUGHT

Birmingham	†11.00-11.50
Boston district	†9.50-10.00
Eastern Pa., No. 1	16.00-16.50
St. Louis, No. 1	9.75-10.25
St. Louis, No. 2	11.50-12.00

FORGE FLASHINGS

Boston district	†7.50- 8.00
Buffalo	11.00-11.50
Cleveland	11.00-11.50
Detroit	8.50- 9.00
Los Angeles	9.00
Pittsburgh	12.50-13.00

FORGE SCRAP

Boston district	†6.50
Chicago, heavy	15.50-16.00

LOW PHOSPHORUS

Cleveland, crops	17.50-18.00
Eastern Pa., crops	17.00-17.50
Pitts., billet, bloom, slab crops	18.00-18.50

LOW PHOS. PUNCHINGS

Buffalo	15.50-16.00
Chicago	15.50-16.00
Eastern Pa., crops	17.50-18.00
Pittsburgh	17.00-17.50
Seattle	15.00

RAILS FOR ROLLING

5 feet and over

Birmingham	†14.00-15.00
Boston	15.00-15.50
Chicago	17.00-17.50
New York	†14.00-14.50
Eastern Pa.	17.00-17.50
St. Louis	16.00-16.50

STEEL CAR AXLES

Birmingham	†15.00-16.00
Boston district	†15.00
Chicago, net	17.50-18.00
Eastern Pa.	20.50-21.00
St. Louis	17.00-17.50

LOCOMOTIVE TIRES

Chicago (cut)	15.00-15.50
St. Louis, No. 1	12.25-12.75

SHAFTING

Boston district	†15.25-15.50
New York	†15.50-16.00
Eastern Pa.	
St. Louis, 1¼-3	

CAR WHEELS

Birmingham	
Boston dist., iron	
Buffalo, steel	
Chicago, iron	
Chicago, rolled s	
Cincin., iron, de	
Eastern Pa., iron	
Eastern Pa., ste	
Pittsburgh, iron	
Pittsburgh, steel	
St. Louis, iron	
St. Louis, iron	

NO. 1 CAST SCR

Birmingham	
Boston, No. 1 mac	
N. Eng. del. No.	
N. Eng. del. text	
Buffalo, cupola	
Buffalo, mach.	
Chicago, agri. ne	
Chicago, auto ne	
Chicago, railroad	
Chicago, mach. ne	
Cincin., mach. d	
Cleveland, mach.	
Detroit, cupola,	
Eastern Pa., cupo	
E. Pa., mixed	
Los Angeles, net	
Pittsburgh, cupol	
San Francisco, d	
Seattle	
St. Louis, cupola	
St. Louis, agri. ma	
St. L., No. 1 mach	
Toronto, No. 1, mach., net	

HEAVY CAST

Boston dist. breal	
New England, del	
Buffalo, break.	
Cleveland, break,	
Detroit, auto net	
Detroit, break	
Eastern Pa.	
Los Ang., auto, n	
New York, breal	
Pittsburgh, break	

STOVE PLATE

Birmingham	
Boston district	
Buffalo	
Chicago, net	
Cincinnati, dealers	
Detroit, net	
Eastern Pa.	
New York, fdy.	
St. Louis	
Toronto dealers, r	

MALLEABLE

Birmingham, R. R.	
New England, del	
Buffalo	
Chicago, R. R.	
Cincin., agri., deal	
Cleveland, rail	
Eastern Pa., R. R.	
Los Angeles	
Pittsburgh, rail	
St. Louis, R. R.	

Iron Ore

Lake Superior Ore

Gross ton, 51½%

Lower Lake Ports

Old range bessemer	$5.25
Mesabi nonbessemer	4.95
High phosphorus	4.85
Mesabi bessemer	5.10
Old range nonbessemer	5.10

Eastern Local Ore

Cents, unit, del. E. Pa.

Foundry and basic 56.63% con.	9.00-9.25
Cop.-free low phos. 58-60%	nominal

Foreign Ore

Cents per unit, c.i.f. Atlantic

Foreign manganiferous ore, 45.55% iron, 6-10% man. nom.	12.00
No. Afr. low phos.	12.00
Swedish low phos.	12.00
Spanish No. Africa basic, 50 to 60% nom.	10.00-10.50
Tungsten. sh. ton. unit, duty pd. nom.	19.00-19.50
N. F., fdy., 55%	7.00
Chrome ore, 48% gross ton, c.i.f.	$23.00-24.00
Molybdenum ores sulphide, per lb.	

molybdenum co
tained, f.o.b. mi

Manganese

Prices not includin
per unit car

Caucasian, 50-52% nom.	
So. African, 50-52% nom.	
Indian, 49-50%	

ts, Strip

trip Prices, Page 68, 69

—Sheet and strip speci- relatively light despite ill backlogs, since au- ders are not ready to rial for new models. ne partsmakers are re- for first placements. s demand is moder- r, and production of and strip has been in- itly. Output of galvan- s in a seasonal slump, oint to 55 per cent.

—Sheet and strip pro- ow to reflect the sharp bookings lately, since much of this tonnage rred until next quarter. nounced prices on hot lled material are pro- est by the small volume left in the market. Mills e adhering to the 3.50c vanized sheets, but this ains to be established.

—Sheet and strip pro- inclined to minimize the ooked at recent conces- rtheless, backlogs were preciably and this has ed promptly by an up- ll operations. New busi- eter.

Except for business from , sheet coverage at re- sions is relatively light. now steadier, with buy- hat slower. Tonnage be- d by warehouses is lower, buying by industrial con- steady in small lots for ipment.

ave steadied, but cold g has not improved. Con- tinue to purchase mostly th current consumption. logs held by eastern pro- dicate coverage at low ently was light. Finish- tions average 50-55 per

rk—Following recent pro- vering by consumers at ncessions, sheet business ght, a condition thought prevail for some time. In f important test, prices be holding at recently an- evels.

rice shading continues in n strip. High-carbon ma- teadier.

lphia—Sheet demand is y non-existent, and no fur- of prices is expected for nonths. Galvanized sheets, selling $4 to $6 below pub- vels, are steadier. Sheet ion is sustained, although stove manufacturing has moderated.

Buffalo—The market has quieted with passing of the price cutting period. Producers took considerable tonnage but are heartened by the fact not much business was booked at the maximum concessions. Production increased last week on better automotive demand.

Cincinnati—New business has tapered since the period of price concessions, while shipments show little change Attempts to strengthen the market have been fairly successful in this district. Despite reported irregularity in galvanized sheets, demand has not increased.

St. Louis—Sheet and strip prices are steadier, but demand now is quiet, following recent extensive coverage by consumers. Enameling stock is moderately active, stove and household appliance makers being best outlets. Galvanized roofing is slow.

Birmingham, Ala.—Sheets retain relatively good activity, at about 65 per cent, according to unofficial estimates. Roofing continues somewhat ahead of manufacturers'

FROM ORE TO METAL

The Story of St. Joe Electro-Thermic Zinc—Number 3 of a Series

THE DRILLMAN

One of the key men in mining is the drill runner, with a keen eye for pay ore, a strong arm for controlling his throbbing machine, and an experienced knowledge for the proper placing of holes to ensure the maximum rock tonnage broken for the minimum of time and dynamite consumed.

Two hoses connect with his drill, one for the compressed air for power, the other supplying dust-preventing water.

He works 500 to 2,000 feet underground in a temperature of 60° F. On the surface it may be a stifling summer day, or 35° below zero, as it was one morning in January 1939.

He drills, loads his holes and fires (blasts) them, in the Edwards and Balmat zinc mines of the St. Joseph Lead Company in northern New York State. From here the concentrates are shipped to the Company's smelter at Josephtown, Pa., for conversion into the new electrothermic Highgrade, Intermediate and Prime Western grades of St. Joe Zinc.

ST. JOSEPH LEAD COMPANY

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PLANT AND LABORATORY, JOSEPHTOWN, BEAVER COUNTY, PENNSYLVANIA

sheets. A slight increase is noted in strip output.

Plates

Plate Prices, Page 68

Chicago—Plate demand is fairly active, aided by requirements for freight car building and repairs, bridge construction and miscellaneous purposes. The last-named outlet has been more active lately. Prices are steadier.

Boston—Shipyard releases are steady, but not widely distributed among producers except by navy yards, contracts for which are placed through open bidding. Other consumers are buying sparingly, including railroads, structural and boiler shops. Tank and specified work is slack. Comparatively little advance tonnage is on mill books. While less prevalent, price shading has not entirely disappeared.

Philadelphia—Miscellaneous plate buying is well sustained, while larger consumers, including railroads and shipbuilders, remain out of the market. Price concessions are disappearing, railroad orders being placed at the full 2.10c Claymont base. However, some weakness still prevails in light tank plates in strip mill gages.

Birmingham, Ala.—Plates are in somewhat better demand. Considerable tonnage should be available before the end of the quarter, when contracts are placed for shipbuilding materials.

Seattle—Plates are the least active of major steel items, with buying confined to lots of less than 100 tons for boilers, tanks and smokestacks. Largest project pending, about 1250 tons, is for the Mud Mountain flood control project, Washington state, bids for which will probably be called next month by United States engineer, Seattle.

San Francisco—Awards and inquiries for plates are in lots of less than 100 tons and little new work is in sight. Awards to date total 16,480 tons, compared with 14,046 tons for the same period last year.

Plate Contracts Placed

1200 tons, large diameter steel pipe, Elwood, Nebr., to Chicago Bridge & Iron Co., Chicago.

700 tons, Coulee dam pipe and fittings, reported to Grimes Pipe & Supply Co., Denver, low bidder.

675 tons, 30-inch steel water pipe, Washington Suburban Sanitary District, Hyattsville, Md., to American Locomotive Co., Dunkirk, N. Y.

145 tons, steel barge, Pennsylvania Water & Power Co., Holtwood, Pa., to Lancaster Iron Works, Lancaster, Pa.

Plate Contracts Pending

700 to 1000 tons, bureau of supplies and accounts, Washington, for delivery to Norfolk, Va., navy yard; bids June 1.

200 tons, bureau of supplies and accounts, Washington, for Pearl Harbor, T. H.; bids June 6.

Bars

Bar Prices, Page 68

Cleveland—Demand is maintained, not having been influenced markedly by recent price revisions. However, some disapproval has been expressed by large users of the elimination of quantity deductions, and a test of the market still is awaited. Only a small amount of business so far is traceable to preliminary work on new automobile models.

Chicago — Merchant bar demand shows little improvement. Farm and industrial tractor builders continue a leading outlet. Some automotive tonnage also has been booked, but substantial buying in that direction has yet to appear.

Boston — Improvement in merchant bar buying has been slight since recent price adjustments. Most tonnage in this district is distributed by secondary sellers and some are dissatisfied with elimination of quantity deductions, though the majority of buyers benefit. Alloy bar releases are fairly steady in small lots, although not apparently influenced by changes in quantity deductions. Demand for forging material has slackened slightly. Cold finished buying is barely held.

For Boston navy yard, bids open at Washington, June 1, under schedule 6350 on 178,800 pounds, nickel, molybdenum and vanadium steel bars. Bids close the same date on 150 tons of bars and strip for Norfolk, Va., schedule 6336.

New York—While too early for much of a test, recently announced bar prices appear to be holding. Demand is light, due partly to previous forward covering. Railroad shops are more active since settlement of the coal dispute, but bar demand from that direction has improved little.

Philadelphia — Large bar consumers are dissatisfied over the net increase of $1 in prices, but no test of the market is expected before late June. The old price continues until July 1. Bar consumption is fairly steady. Farm equipment builders have experienced a sharp rise in business this month, but the outlook is less promising.

Birmingham, Ala.—Demand for bars is bolstered mainly by concrete reinforcing, a large tonnage of which has come out wi 10 days. Disappointmen of agricultural implem evident.

Pipe

Pipe Prices, Pag

Pittsburgh — Restricte from oil well drillers hold down activity in although standard pipe sustained. Consigned st latter are moving fairly tubes are in better de railroads though some expectations.

Cleveland—Cast iron ies and orders have mo past few weeks, and th for a quieter market in mer. Government-financ largely is under contrac contributing to a falling quiries, while private ca to appear. Standard pi is steady, with oil cou relatively slow.

Chicago—Cast pipe is requirements have been although scattered dema for WPA work. Privat is slow. Chicago recently 700 tons.

New York—While four shared in award of 14,0 cast pipe for New York stocks, most went to Un Pipe & Foundry Co. Sm chasing is slightly heavi for Long Island and N largely through contrac large tonnages are be Utilities are buying spari

Birmingham, Ala.—Im noted several weeks ago i pipe production continues turn is moderate, how bookings are mostly in small quantities.

Seattle—Inquiry has and several sizable proje veloping. Tonnages pe largest in several months Wash., has approval of WPA allotment and op May 22 for materials, about 1200 tons of cast Award is still pending fo 2 to 8-inch cast iron for t district, Eugene, Oreg., H cell, Seattle, low.

San Francisco—Demand iron pipe has improved co and pending business now more than 5000 tons. The municipal utility district, Calif., has called for bi opened May 31 for the se est inquiry of the year, of 2 to 20-inch pipe. Awar

and brought the to- 11,254 tons as com- 746 tons for the cor- iod in 1938.

Placed

h, Los Angeles; divided ican Cast Iron Pipe Co. Cast Iron Pipe Co., both m, Ala.

Pending

20-inch, east bay mu- district, Oakland, Calif.;

ield street improvement, 16-inch; bids in.

nate transite, Port An- bids in.

10-inch, South Pasadena, opened.

6-inch, Inglewood, Calif.;

h, Spokane, Wash.; H. G. ttle, for U. S. Pipe & Burlington, N. J., low.

Prices, Page 69

— Wire orders are change is indicated for ure, and producers ex- market during the sum- nd for merchant prod- and competition is keen aller orders. Prices of e fairly steady, although revails in certain lo- me items.

—Changes in wire and roducts demand lately light. Some business for bile models is appear- rge tonnages are not number of weeks. Out- siness in merchant prod- newhat unfavorable in g in resale trade in some npared with a year ago.

k—Some scattered wire appearing from automo- sts, but the bulk of ton- red for new models is d to be released for sev- Demand otherwise is ith specialties slightly e. May volume was a d of April. Prices are ly.

am, Ala.—Wire produc- at approximately 60 per estimated, and is next in heets.

ncisco—Demand for wire is holding up well but most part, are relatively ages. Bureau of reclama- pen bids May 31 for 275 to 7/16-inch seven and double galvanized strand, itation 44,337-A-1 for de- Parker, Ariz.

Rails, Cars

Track Material Prices, Page 69

Carbuilders estimate May bookings at about 1000 freight cars, against 3095 in April. The total so far this month is 976 cars but with only two working days left and little inquiry active this is not likely to be increased materially.

Federal court has approved the recent purchase by the Denver & Rio Grande Western of 550 freight cars from Pressed Steel Car Co., McKees Rocks, Pa. Birmingham Southern has placed 100 hoppers and 10 flats with Pullman-Standard Car Mfg. Co. Electro-Motive Corp., La Grange, Ill., has booked 20 diesel switchers for Great Northern, Chicago, Burlington & Quincy and Pere Marquette.

Locomotives Placed

Chicago, Burlington & Quincy, five 600-horsepower diesel switchers, to Electro-Motive Corp., La Grange, Ill.

Great Northern, fourteen 1000-horsepower diesel switchers, to Electro-

ATLAS ORE TRANSFERS

100 ton—3 compartment Ore Transfer. Roller Bearing Journals. Double end control for car operation. Individually operated discharge gates.

OTHER ATLAS PRODUCTS

Gas-Electric and Diesel-Electric Locomotives . . . Electric Transfer Cars for Blast Furnaces and Steel Plants . . . Stockhouse Scale Cars for Blast Furnaces . . . Concentrate and Calcine Cars for Copper Refineries . . . Automatic and Remote Controlled Electric Cars . . . Pushers, Levellers and Door Extractors . . . Coal Charging Lorries, Coke Guides and Clay Carriers . . . Atlas Patented Coke Quenching Cars for By-Product Coke Ovens . . . Atlas Patented Indicating and Recording Scales . . . Special Cars and Electrically Operated Cars for every conceivable Purpose.

THE ATLAS CAR & MFG. CO.

Engineers . . . Manufacturers

CLEVELAND, OHIO

Motive Corp., La Grange, Ill.

Pere Marquette, one 600-horsepower diesel switcher, to Electro-Motive Corp., La Grange, Ill.

Car Orders Placed

Birmingham Southern, 100 hoppers and 10 flat cars to Pullman-Standard Car Mfg. Co., Chicago.

Buses Booked

American Car & Foundry Motors Co., New York: Five for Biddeford & Saco Railroad, Biddeford, Me.; three for Boston, Worcester & New York Street Railway, Framingham, Mass.; one for Campus Travel Inc., New York; one for Quaker City Bus Co., Ocean City, N. J.; two for Maine Central Transportation Co., Portland, Me.

Shapes

Structural Shape Prices, Page 68

Pittsburgh—Awards continue to hold up well and new inquiries are also more numerous.

Cleveland—Private work is light and there is little prospect of any improvement soon. Mt. Vernon Bridge Co., Mt. Vernon, O., is low on 2500 tons for the superstructure to the Erie avenue bridge, Lorain, O. Another section of the Cuyahoga river straightening project closes June 1. A number of bridge jobs in Youngstown and here, involving considerable tonnage, should come out for bids soon. No improvement in price is noted.

Chicago — Outstanding pending project involves 2400 tons for a viaduct over the Rock Island tracks, Blue Island, Ill.; Thomas McQueen Co., Forest Park, Ill., is low. Although numerous small jobs have been awarded recently, and many substantial tonnages are still awaiting disposition, the market is definitely quieter.

Boston—Contractors have closed on 1225 tons, bridge needs in Vermont, most being I-beam spans going to American Bridge Co., Pittsburgh. Inquiry in other directions is slightly heavier, notably for steel sheet piling for flood control work, Springfield, Mass., and East Hartford, Conn., 3000 tons, on which general estimates are in. Little shop fabrication is required for current bridges being placed. Prices on fabricated material are easy.

Philadelphia — Smaller structural shops are badly in need of work since volume of construction, alteration and repair jobs usually handled by these shops are extremely disappointing. Some of the larger interests are about 50 per cent occupied. Prices remain weak.

Buffalo — Demand is moderately encouraging. The Buffalo Structural Steel Co. booked 800 tons for the Kleinhans music hall, Buffalo. Awards are awaited on the new convention hall and Commodore Perry housing project here. An addition to the Elmira reformatory is up for bids June 1, involving 800 tons of shapes and bars.

Seattle—Largest project pending is the Ballard bridge, Seattle, 1508 tons of shapes and an unstated quantity of sheet piling, general contracts placed. Washington state receives bids June 6 for the Snohomish river bridge involving 550 tons. Plants have fair tonnages on hand, but no large projects have developed recently.

San Francisco—The sub-contract for 2250 tons of shapes and 799 tons of sheet steel piling for the Ballard bridge, Seattle, has been placed with Isaacson Iron Works. Bids have just been taken on 1455 tons for the Lewis river bridge in Clark and Cowlitz county, Washington. Awards aggregate 5161 tons and brought the total to date to 55,322 tons, compared with 44,826 tons last year.

St. Louis — Interest centers in prospective lettings involving about 3000 tons of shapes. However, actual placements are negligible, aggregating less than 400 tons. Operations at fabricating yards are slightly below 25 per cent of capacity, with backlogs diminishing.

Shape Contracts Placed

3049 tons, including 799 tons of sheet piling, Ballard bridge, Seattle, to Isaacson Iron Works, Seattle.

1900 tons, field house, Michigan state college, East Lansing, Mich., to R. C. Mahon Co., Detroit.

805 tons, Kleinhans music hall, Buffalo, to Buffalo Structural Steel Co., Buffalo.

663 tons, bearing piles, United States engineer office, proposal 215, to Columbia Steel Co., San Francisco.

600 tons, Great Lakes Carbon Corp., Niagara Falls, N. Y., to Bethlehem Steel Co., Buffalo.

570 tons, finishing plant, Chatham Mfg. Co., Elkin, N. C,. to Bethlehem Fabricators Inc., Bethlehem, Pa.

520 tons, freight terminal, New York Central railroad, Twelfth ... York, to American Brid... burgh.

450 tons, state bridge, Jac... Paul, to Bethlehem Ste... hem, Pa.

370 tons, six I-beam br... Vt., to American Brid... burgh; W. G. Brown, Sc... general contractor; bids

310 tons, sanitation ga... avenue, Brooklyn, to Be... Co., Bethlehem, Pa.; thr... ment division, treasury ... New York.

300 tons, additions and ... lumbia Broadcasting Co., ... second street, New Yo... Structural Steel Co., Al...

300 tons, apartments, for El... ing authority, Elizabeth ... Lafayette Iron Works.

300 tons, apartments, Wyn... Corp., Wynnewood, Pa., ... Iron Works, Eddystone, P...

300 tons, state bridge, FAGH... ter Grove, Iowa, to Clinto... Clinton, Iowa.

267 tons, sheet piling, Unite... gineer office, proposal 27... geles, to Bethlehem Ste... Angeles.

265 tons, foundry building, ... Co., Blossburg, Pa., to ... Co., Milton, Pa.

260 tons, truss bridge, We... Iowa, to Clinton Bridge ... Iowa.

245 tons, service building ... Queens tunnel, Long Islan... to Harris Structural Ste... York.

240 tons, bridge over Shet... Norwich, Conn., to Bethleh... Bethlehem, Pa.

227 tons, Texas state highw... ment, to Austin Co., Clevel...

225 tons, bridge over Shet... Willimantic, Conn., for to... ham, Conn., to American ... Pittsburgh.

223 tons, two I-beam bridges ... Newfane, Vt., to American ... Pittsburgh; W. G. Brown, ... N. Y., general contractor; bi...

217 tons, 3-span I-beam b... nington, Vt., to Bethlehem ... Bethlehem, Pa.; Benningto... tion Co., Bennington, Vt., ge... ager.

200 tons, sheet piling, Puget S... ing dock, to Bethlehem ... Seattle.

195 tons, bridge WPSS-11553-I... Va., to Virginia Bridge Co... Va.

180 tons, heating plant, for ... state college, Storrs, Conn.... mann Steel Co., Holyoke, Ma...

175 tons, viaduct over Missc... railroad, Ralston, Nebr., f... International Steel Co., Eva...

165 tons, three I-beam bridges ... Halifax, Vt., to American ... Pittsburgh; W. G. Brown, ... N. Y., general contractor; bi...

150 tons, grade and high schoo... N. Y., to Weatherly Struc... Co., New York.

150 tons, store, Kresge Co., W... Del., to Belmont Iron Wo... delphia.

150 tons, theater, Wildwood, N...

Shape Awards Compared

	Tons
Week ended May 27	**14,923**
Week ended May 20	**11,337**
Week ended May 13	**34,765**
This week, 1938	**6,550**
Weekly average, year, 1938	**21,566**
Weekly average, 1939	**23,280**
Weekly average, April	**24,531**
Total to date, 1938	**326,905**
Total to date, 1939	**465,607**

Includes awards of 100 tons or more.

Northern New Jersey Oil Co., Linden, N. J.

500 tons, grade crossing eliminations, Tottenville, N. Y., for Staten Island Rapid Transit Co.

500 tons, four highway bridges, Leavenworth, Kans.; Ottibger Bros., Leavenworth, low.

400 tons, addition to Elmira, reformatory, Elmira, N. Y.; bids June 1.

360 tons, three bridges, Morris county, New Jersey; bids June 1; includes 125 tons bars.

357 tons, three bridges, route 6, section 11A, Parsippany-Troy Hills and Montville townships, Morris county, New Jersey; bids June 9, E. Donald Sterner, state highway commissioner, Trenton. Work includes underpass at Bloomfield avenue and bridges, Rockway and Passaic river flood control.

350 tons, highway bridge, contract 341, Wawarsing, N. Y., for New York City.

350 tons, Klein memorial auditorium, Bridgeport, Conn.

250 tons, office building, for G. & C. Merriam Co., Springfield, Mass.

225 tons, warehouse and factory building, Montgomery Ward Co., Chicago Heights, Ill.; bids May 31.

200 tons, state bridge over Ammonoosuc river, Northumberland, N. H.

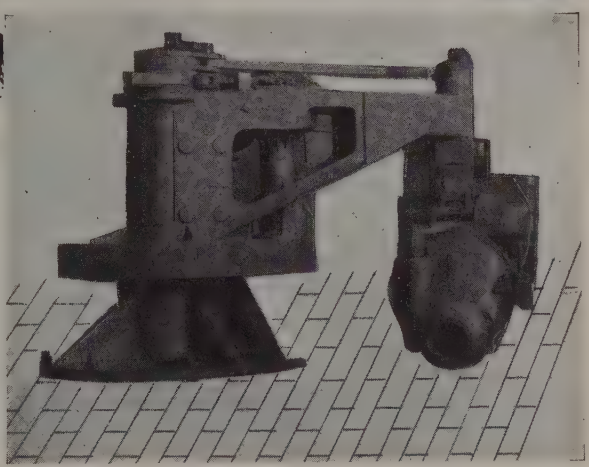
200 tons, apartments and garage, Trenton, N. J., for unknown owner.

200 tons, bridge, Northumberland, N. H.

NEW PEDESTAL TYPE CLAY GUN . . .

BROSIUS PRODUCT NOW IN SUCCESSFUL OPERATION

This new Pedestal Type Gun was recently put in service by a large southern steel plant. The gun proper, of the same design as the well proven Brosius gun widely used throughout the industry, is motor controlled with positive drive and constant speed. The 9 cu. ft. capacity is ample for any tapping hole and the cast steel crane is designed to give clear view and easy access at all times.



OTHER PRODUCTS

Steam, Hydro-Electric, and Electric Mechanical Clay Guns, Hand and Motor Operated Goggle Valves, Flue Dust Conditioners, Blast Furnace Slag Granulating Machines, Single Hook Grab Buckets, Automatic Single Hoist Grab Buckets, Overhead and Auto Floor Charging Machines for serving Heating and Melting Furnaces, Auto Floor Manipulators for serving Steam Hammers, Presses, etc.

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Brosius Equipment is Patented in the United States and Foreign Countries

Behind the Scenes with STEEL

Back Home and Safe

This week we can't even rhyme "candy is dandy but liquor is quicker" so don't be disappointed. With the roof of our mouth sunburned from upturned gapes at the Trylon, with our two oversized feet still burning, and with our cash position definitely on the rocky side, we can, however, toss a word or two your way that may not only entice you over to Mr. Whalen's big show but will also get you back in one piece and happy.

■ What a show it is. From the minute you plunk down six bits and pass through the turnstiles you will "oh" and "ah" until you are positive nothing else can get you excited and then you'll get in a dither all over again. With the first bar of *Sidewalks of New York* ringing constantly in your ears from the trick bus horns you will find the very best thing to do just as soon as you arrive is to hop on one of the 50 cent tours and take a fifty minute ride that you won't forget for yars and yars. Then you'll start to pick your spots.

■ You'll have Tony Sarg's map of the 1216½ acre layout by now and will be trying to find the Metals building while the wife asks one of those handsome police guides how far it is to Fashions and Cosmetics. Then there will be a slight skirmish and you'll compromise on the Lagoon of Nations, which won't be a mistake. There you will have such a selling job done on you as you never saw. From the stainless steel and marble Russian building (the most expensive on the grounds) to the quaint and beautiful Japanese pavilion you are constantly being sold a bill of goods. In the latter, you'll have to inquire several times to find the unballyhooed exhibit of machine gears made from compressed silk. We understand these self-lubricating, noiseless, and lightweight gears are in wide use in Japan today. You'll be duly impressed by the original Magna Charta in the British pavilion and decide it may be a bit expensive to try the terraced French restaurant, but by now you've heard about the top show of the fair and hop on your horse to get over to the Transportation section.

■ Unless you get there plenty early or are a personal friend of Mr. Sloan you'll have to wait to get into General Motors but wait by all means. This "fair within a fair" is beyond description. The Futurama ride of 15 minutes in a comfortable lounge chair through the 1960 of Norman Bel Geddes is the most impressive and thrilling thing we've ever done. If you go all the way to New York and do nothing else but this one thing you will be well repaid.

■ There are forty million other things that you will see, and it would take this whole issue of STEEL to do justice to a fraction of the "world's greatest temporary peace time business." All we can do is become another of Grover Whalen's self-appointed promoters and try to give you the urge to hie yourself over to the big city. It won't cost you much dough (the average family spends $8.00 a day including everything) and for yourself and your children it will be one of the most exciting and educational times of your life.

■ Just remember a couple of things. Plan on at least three or four days in order to see most of what you'll not want to miss, take along a comfortable pair of walking shoes and be sure to try one of those mouth-watering *crepes suzettes* with *grande marnier* which you can pick up at various spots around the grounds.

■ So, get the ol' jalopie greased, cash in that overdue insurance policy, get some one to stay with the baby and have a good time.

SHRDLU

200 tons, bridge, Leaver Geiger & Rutherford, low.

175 tons, alterations and assembly building, for tor division of General Norwood, O.

175 tons, building, for Stores Inc., Arlington c

167 tons, three I-beam br ton, Vt.; Rome Constr Holden, Mass., low, S May 19, Montpelier.

165 tons, 3-span plate gir feet 8 inches long, route ville Village, Vt.; bids Sargent, commissioner Montpelier; also closing foot I-beam span, route Brandon town line.

157 tons, N. Y. C. grade county, Ohio; Labartau O., low.

150 tons, Tuscarora mou Shady Gap, Pa., for Penns pike commission.

150 tons, building for Mont Co., Meadville, Pa.

150 tons, addition to high Richmond, N. Y., for New

125 tons, beam spans, La Mich., for state.

125 tons, bridge over Ottaw O., for Detroit, Toledo & road.

125 tons, completion A. C. ha nexes, Scott Field, Ill.

125 tons, resident hall for University of Maine, Oron

120 tons, bridge, Wyoming sylvania; bids in.

100 tons, 3-span I-beam brid ton, Vt.; W. W. Wymanı burne Falls, Mass., low, $2 May 19, Montpelier, Vt.

Unstated tonnage, framing power plant; bids to recl reau, Denver, June 2, Spec

Unstated tonnage, piling, Cu straightening project, cont 3B; bids June 2.

Reinforci

Reinforcing Bar Prices,

Pittsburgh — Prices a shape, excepting the ea board and westetrn N where weakness as low a hundred pounds mill made. However, consid tivity is noted in the ma out resort to price cu nages are fairly large w ments active. New pro tinue to come out in g bers, although there are vate jobs.

Cleveland—Public work to lead. Sam W. Eme Cleveland, recently awa tons to Patterson Leitch land, for the Valley Vie project, here. The Luna ing project, 750 tons, clos

...rs are fairly active
...ages recently booked
...ool jobs, store fronts
...miscellaneous work.
...weak.

...The market is un-
... demand well main-
...v of numerous proj-
...pending. A substan-
...f small jobs continue
...ile several over 100
... be placed at an early

... — Prices continue
...n the weak side, al-
...r effort is being made
...e price structure. In
...ich efforts have failed
...n for larger tonnages.
...wer and inquiry is fea-
... tons, East River drive,
... streets, New York.

...a — Fabricators re-
...te move to stiffen the
...deformed bars, which
...oving at concessions of
...e per ton. Low prices
...t impossible for some
...o quote on some jobs.
...obs requiring large ton-
...p for bids.

...ending work includes
...ple contracts including
... Seattle federal court
...or the Ballard, Seattle,
...00 tons for a flour mill
... The Mud Mountain
...ington state, bids to
...tes engineer, Seattle,
... June, will require about

...icisco — Awards are
...ing 4521 tons, bringing
...ggregate to 75,558 tons,
...ith 40,907 tons a year
... Steel Co. booked 2850
...e parcel post building,
...sco. The bureau of rec-
... calling for new bids on
...er delivery at Pollock,

...—A fair number of small
...een placed totaling close
...s. A large order was
...he South, 2100 tons for

... Bars Compared

	Tons
...d May 27.....	11,360
...d May 20.....	10,940
...d May 13.....	9,997
..., 1938	5,609
...erage, year, 1938	6,959
...verage, 1939.....	11,155
...erage, April.....	9,494
...ate, 1938	123,616
...ate, 1939.....	223,109

...awards of 100 tons or more.

a housing project, New Orleans, went to Connors Steel Co., Birmingham, Ala. Operations at local fabricating yards are approximately one-fourth of capacity.

Reinforcing Steel Awards

2850 tons, parcel post building, San Francisco, to Soule Steel Co., San Francisco.

2100 tons, housing project, New Orleans, to Concrete Steel Co., Birmingham, Ala.

800 tons, Valley View housing project, Cleveland, to Patterson-Leitch Co., Cleveland; through Sam W. Emerson Co., Cleveland.

800 tons, warehouse, Hill Bros. Inc., Edgewater, N. J., to Bethlehem Steel Co., Bethlehem, Pa.; through Austin Co., Cleveland.

800 tons, coffee warehouse and mixing plant, Hills Bros. Coffee Inc., Edgewater, N. Y., to Bethlehem Steel Co., Bethlehem, Pa.; Austin Co., contractor.

785 tons, treasury department, Los Angeles, invitation A-913, list 304, to Judson Steel Corp., San Francisco.

500 tons, viaduct over Rock Island tracks, Burr Oak avenue, Blue Island, Ill., to Joseph T. Ryerson & Son Inc., Chicago; through Thomas McQueen Co., general contractor, Forest Park, Ill.

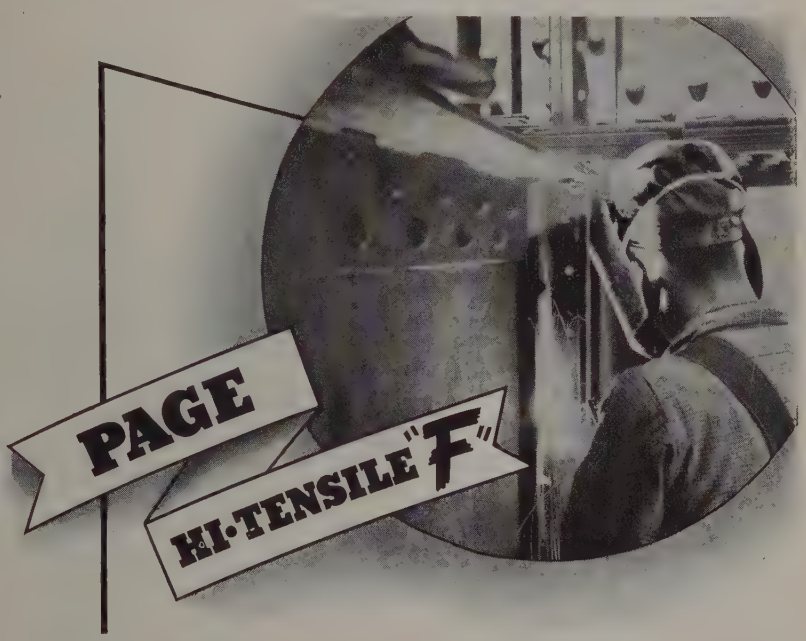
500 tons, carbon electrode plant, Great Lakes Carbon Corp., Niagara Falls, N. Y., to Bethlehem Steel Co., Bethlehem, Pa.; Walter Johnson Construction Co., contractor.

375 tons, Commodore Perry housing project, Buffalo, to Bethlehem Steel Co., Bethlehem, Pa.; John W. Cowper Co., contractor.

370 tons, King river bridge, Tulare county, California, to Soule Steel Co., San Francisco.

370 tons, circumferential highway, New York, to Truscon Steel Co., Youngstown, O.; through Tuckahoe Construction Co., Tuckahoe, N. Y.

215 tons, tie plates, Alaska Railroad, to Bethlehem Steel Co., Seattle.



for better welds *and faster welding*

● Jobs like the reinforcing of bridge members, as pictured above, are done in record time with Page Hi-Tensile "F". The welds are strong and ductile. They resist the effects of heavy vibration.

● Page Hi-Tensile "F" is an all-purpose electrode with a reputation for reducing fabrication costs. It is perfectly suited to construction, maintenance and production work. It saves a lot of time on high-speed, single-pass welding and on jobs in Cor-ten, Cro-man-sil, H-T-50 and other new alloy steels.

BUY ACCO QUALITY *in Page Welding Electrodes, Page Chain Link Fence, TRU-LAY Preformed Wire Rope, Reading-Pratt & Cady Valves, Campbell Abrasive Cutting Machines, American Chains (Welded and Weldless) and Wright Hoists.*

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AMERICAN CHAIN & CABLE COMPANY, Inc.

AMERICAN CHAIN DIVISION • AMERICAN CABLE DIVISION • ANDREW C. CAMPBELL DIVISION • FORD CHAIN BLOCK DIVISION • HAZARD WIRE ROPE DIVISION • HIGHLAND IRON AND STEEL DIVISION • MANLEY MANUFACTURING DIVISION • OWEN SILENT SPRING COMPANY, INC. • PAGE STEEL AND WIRE DIVISION • READING-PRATT & CADY DIVISION • READING STEEL CASTING DIVISION • WRIGHT MANUFACTURING DIVISION • IN CANADA: DOMINION CHAIN COMPANY, LTD. • IN ENGLAND: BRITISH WIRE PRODUCTS, LTD. • THE PARSONS CHAIN COMPANY, LTD. • *In Business for Your Safety*

200 tons, plant, Lehigh Portland Cement Co., Allentown, Pa.; to Bethlehem Steel Co., Bethlehem, Pa.

161 tons, bureau of reclamation, invitation 8837-A, Engle, N. Mex., to Laclede Steel Co., St. Louis.

134 tons, bureau of reclamation, invitation 48,188-A, Cody, Wyo., to Colorado Fuel & Iron Co., Pueblo, Colo.

100 tons, Southern parkway MSO-39-6, New York, to Truscon Steel Co., Youngstown, O.

100 tons, public project, Lynn, Mass., to Truscon Steel Co., Youngstown, O.

100 tons, bridge over Levisa river, Buchanan county, Virginia, to Virginia Steel Co.; Haley, Chisholm & Morris, contractors.

100 tons, Keystone Steel & Wire Co. plant, Peoria, Ill., to Ceco Steel Products Corp., Cicero, Ill.

Reinforcing Steel Pending

1575 tons, flood wall, Ceredo, W. Va.; army engineers, Huntington, W. Va.

550 tons, housing project, Huntington, W. Va.; Consolidated Engineering Co., low.

500 tons, Western avenue bridge, Chicago; M. J. McDermott Co., Chicago, low.

400 tons, river intake, Owensboro, Ky.

350 tons, gun battalion barracks, Hickam Field, T. H.; bids June 12.

316 tons, paint shop and transformer building, specification 8994, Mare Island, Calif.; general contract to DaLucca & Son Inc., San Francisco, at $168,750.

290 tons, William Howard Taft school, New York.

270 tons (also 157 tons shapes and metal work and 85 tons 6-inch cast iron pipe), Leavenworth hatchery project; Norris Bros., Burlington, Wash., low; materials to be supplied by bureau of reclamation.

260 tons, North Meadows pumping station, Hartford, Conn., for army engineers, Providence, R. I.

250 tons, grade separation and paving, Brooklyn, N. Y.

200 tons, flood control dike, Springfield, Mass.; bids to army engineers, Providence, R. I.

195 tons, James H. Bowen high school addition, Chicago; James McHugh & Son Co., low.

180 tons, pumping station, Grosse Point, Mich.

175 tons, two bridges, Wawarsing, N. Y., Delaware aqueduct, 341; bids June 6 to board of water supply, New York.

170 tons, generator plant, Holland, Mich.

170 tons, section 18, Pennsylvania turnpike, Franklin county, Pennsylvania.

125 tons, underpass and two bridges, Rockaway and Passaic river flood channel, route 6, section 11A, Parsippany-Troy Hills and Montville townships, Morris county, New Jersey; bids June 9, E. Donald Sterner, state highway commissioner, Trenton.

100 tons, miscellaneous highway work, Washington state; bids at Olympia, June 6.

Unstated tonnage, two Montana state spans, St. Regis river and Glacier county; bids in.

Unstated tonnage, state concrete crossings in Klamath and Wheeler counties, Oregon; bids in.

Unstated tonnage, four state crossings, Jefferson county Idaho; R. G. Rowan, Salt Lake City, Utah, low.

Unestimated tonnage, garage, 14 East Monroe street, Chicago.

Unestimated tonnage, addition to Goodman Theater, Art institute, Chicago.

Unestimated tonnage, sanitorium, Danville, Ill.; bids May 30.

Pig Iron

Pig Iron Prices, Page 70

Pittsburgh—Two blast furnaces banked during the coal mining tieup have resumed, while pig iron shipments are slightly heavier. Coke oven operations also have been stepped up. Supplies are being increased to the pre-strike level and demand is fairly heavy.

Cleveland—Third quarter books are expected to be opened this week at unchanged prices. Consumers are not interested in forward buying, though shipments gradually are being completed against contracts placed last fall before the $1 increase. Deliveries this month are expected to show little change from April. Foundry operations continue to tend downward.

Chicago — Shipments generally are on a par with April, but with many foundries closing four days this week for the holiday, the month as a whole likely will be off moderately. One interest, however, estimates its shipments about 33 per cent improved over last month, but this is an isolated case. Foundry operations are generally unchanged. Scattered sales of iron are being made, reportedly at a firm price of $21. Coke shipments have dropped since settlement of the coal strike.

Boston — Buying is light, and foundry melt continues to drag. Prompt shipment is requested on most iron releases. Announcement of unchanged third quarter prices is expected shortly.

New York—Reaffirmation of pig iron prices for third quarter by eastern sellers is anticipated. One Michigan producer of charcoal iron has extended prices at $25, base.

Philadelphia—Foundry operations are sustained except for stove plants. Pig iron buying is for only immediate needs. Prices are not under pressure and are expected to be extended into third quarter.

Buffalo—Shipments have leveled off recently, but May pig iron business is expected to be slightly ahead of April. Foundry operations are barely steady, with most melters averaging three d

Cincinnati—With co pering, pig iron users a in covering only imm Shipments are unimp liveries lagging behin rate.

St. Louis—Shipment the March and April ra buying is quiet. Sto on light schedules, w plement makers rel active of leading melter stocks are being incre tool and engine build busy.

Toronto, Ont.—Desp dications of improvem markets, merchant pi continue slow. Melters regularly but in smal ness is principally fron sumers, larger users stocked. Prices are fi changed.

Scrap

Scrap Prices, Page

Pittsburgh—A strong evident, although recent been within the current In some cases such represent an advance o prevailing a short tim additional buying is be essary to develop a str

Cleveland—Recent pu iron and steel scrap in Cl the Youngstown distri portant steelmakers ha the heavier steel grades $1 a ton. These purcha have been made in sma the aggregate has been

Chicago — Another m of No. 1 heavy melting ported at the prevailing ket. Brokers show litt in selling at this price ers generally are asking figure. However, the $1 range of quotations is since occasional small to going at $12.75 and even is reported.

Boston—Steady and prices for heavy melting export, with boat loadi tend to support the mark tinued, a stronger influe 2 cast and compressed considered likely, greate of both grades being inclu last large export orde European cartel. Close to is being loaded here, w 13,000 tons was shipped including 6900 tons for J of which was loaded at Me. Brokers are paying $13, dock, for heavy m

stic buying is light.
—Domestic scrap buy-
and prices are un-
astern steelworks and
e placing little beyond
However, export ac-
proved, with boat load-

ia—Domestic scrap de-
et, but the export mar-
active. Foreign ship-
here this month are
exceed 30,000 tons. Ex-
are higher at $13.50 to
No. 2 steel and $15 to
No. 1. In the domestic
2 remains $12.50 to
1 at $15 to $15.50.

Scrap prices are holding
educed levels, with little
ss in sight. Sentiment
ded by recent steelmak-
nd mills are taking ship-
ily against old orders.
Except for seasonal ac-
st grades which found-
aking in fair amounts,
nues in the doldrums.
i — Scrap activity is
buying against old con-
otations are unchanged
eceiving some support
eluctance of dealers to
terial at recently lowered

—The market has been
by the recent purchase
onnages of heavy melt-
y two leading consumers
y the next 30 days. No.
ught $11.50, or $1 below
ous purchase. Receipts
continue very light.
ham, Ala. — The scrap
ntinues dull, with little
f an early upturn. Move-
small lots.
—Prices remain firm de-
of export buying. Stocks
ted and receipts below
he export market is un-
$14 to $14.50 while local
buying at $11 and $12
and No. 1 respectively.
, Ont.—Prices on all scrap
ve been reduced 50 cents
oth Toronto and Montreal
Weakness is attributed to
emand and lower bids by
s. Hamilton mills are said
cut their offers for steel
re than $1. Scrap is flow-
dealers' yards more rap-
tly from rural districts.

Plate

Plate Prices, Page 68

ate production is steady at
nt. In the Chicago district
is closer to 75 per cent.
ions continue active, with
ill showing some improve-
ment. However, peak of the season's demand is not far off. Sanitary cans are taking the larger part of current shipments. General line can needs are about steady.

Warehouse

Warehouse Prices, Page 71

Pittsburgh—Announced price reductions largely recognize cutting that had prevailed for some time. Hot-rolled carbon bars are down $5 a ton, with strip, sheets, plates and shapes off $3. Cold-finished carbon bars are off $1. Alloy bars have been reduced $2 for cold-drawn and $3 to $4 for hot-rolled.

Cleveland — Nearly all leading warehouse products have been reduced. Hot-rolled carbon bars are off 25 cents per 100 pounds and cold-drawn 5 cents; plates, structural shapes and hot and cold-rolled sheets and strip 15 cents. Hot-rolled alloy bars are down 15 to 40 cents, with cold-drawn alloy 10 cents lower. Galvanized sheets are unchanged.

Boston—Prices have been reduced $1 to $2.50 a ton. Cold-finished in all shapes is down $1 and reductions of $2.50 have been made on bands, hoops, blue annealed sheets, one pass cold-rolled sheets, uniform blue sheets and cold-rolled strip. Bars, bar shapes, tees, zees, half rounds, half ovals, ovals and bevels and round edge tire steel are down $2. Orders have improved slightly, May volume with most New England warehouses being slightly above April.

Chicago—Business moderated slightly last week, although May is expected to compare favorably with April. The usual seasonal letdown is counted on to appear within the next 30 to 60 days.

New York—Revision of warehouse prices to conform with recent mill changes has been practically completed, reductions ranging from $1 per ton on cold-finished bars to $2.50 for cold strip, hot strip and hot-rolled sheets. Hot-rolled bars and angles are down $2 a ton. Most alloys in these shapes are off 15 to 20 cents per 100 pounds.

Philadelphia—Warehouses are attempting to maintain current prices on sheets and hot-rolled bars instead of following revisions made in other districts. One exception is a $1 reduction in cold-drawn bars. Business continues moderately ahead of April.

Buffalo—Prices have been cut $1 to $5 a ton, the largest reduction

TOWMOTORS CLEVELAND

Yes, the problem *was* in the bag. But with a TOWMOTOR fork truck using the *pallet system*—many bags of loose bulky material are being tiered as a unit. And the bags don't mat or stick together in the pile. TOWMOTORS are doing a better job at lower cost on scores of different handling jobs. It will cost you only 3 cents to investigate. Why not do it today?—TOWMOTOR CO., 1247 East 152nd Street, Cleveland, Ohio. New York Office: 92 Liberty Street, Phone: REctor 2-3977. Sales Offices in 22 Principal Cities. Pioneers of straight gas power.

being on hot-rolled bars. Sheets, strip, plates and shapes are down $3 and cold-drawn bars $1. Galvanized sheets are unchanged. Business is a trifle heavier.

Detroit — Warehouses have announced new prices on a number of items, but quotations on many products still are unsettled and subject to revision at any moment.

Cincinnati—Prices have been revised as a consequence of mill changes. More business is developing from resumption of coal mining. Building items continue slow.

St. Louis—Price reductions by local warehouse include $1 a ton on cold-finished bars, $2 on hot-rolled bars and $3 on certai sheets and strip.

Nonferrous Metal Prices

Spot unless otherwise specified. Cents per pound.

April	Copper: Electro, del. Conn.	Copper: Lake, del. Midwest	Copper: Casting, refinery	Straits Tin, New York: Spot	Straits Tin, New York: Futures	Lead N. Y.	Lead East St. L.	Zinc St. L.	Aluminum 99%	Antimony Amer. Spot, N.Y.	Nickel Cathodes
May											
20	10.00	10.00	9.62½	48.80	48.25	4.75	4.60	4.50	20.00	11.75	35.00
22	10.00	10.00	9.62½	48.80	48.30	4.75	4.60	4.50	20.00	11.75	35.00
23	10.00	10.00	9.62½	48.70	48.25	4.75	4.60	4.50	20.00	11.75	35.00
24	10.00	10.00	9.62½	48.85	48.45	4.75	4.60	4.50	20.00	11.75	35.00
25	10.00	10.00	9.62½	48.80	48.50	4.75	4.60	4.50	20.00	12.00	35.00
26	10.00	10.00	9.62½	49.00	48.62½	4.75	4.60	4.50	20.00	12.00	35.00

MILL PRODUCTS

F.o.b. mill base, cents per lb., except as specified. Copper brass products based on 10.00c Conn. copper

Sheets

Yellow brass (high) 16.48
Copper, hot rolled 18.12
Lead, cut to jobbers 8.00
Zinc, 100 lb. base 9.75

Tubes

High yellow brass 19.23
Seamless copper 18.62

Rods

High yellow brass 11.85
Copper, hot rolled 14.62

Anodes

Copper, untrimmed 15.37

Wire

Yellow brass (high) 16.73

OLD METALS

Nom. Del. Buying Prices

No. 1 Composition Red Brass

New York 5.75-6.00
Cleveland 6.50-6.75
Chicago 5.87½-6.12½
St. Louis 6.00-6.25

Heavy Copper and Wire

New York, No. 1 ..... 7.75-7.87½
Cleveland, No. 1 ..... 7.50-7.75
Chicago, No. 1 ..... 7.25-7.50
St. Louis 7.50-7.75

Composition Brass Borings

New York 5.00-5.25

Light Copper

New York 6.25-6.50
Cleveland 5.75-6.00
Chicago 5.87½-6.12½
St. Louis 6.00-6.25

Light Brass

Cleveland 3.50-3.75
Chicago 3.75-4.00
St. Louis 3.50-3.75

Lead

New York 4.10-4.35
Cleveland 3.50-3.75
Chicago 3.50-3.75
St. Louis 3.50-3.75

Zinc

New York 2.50-2.62½
Cleveland 2.00-2.25
St. Louis 2.00-2.25

Aluminum

Borings, Cleveland 5.75-6.00
Mixed, cast, Cleveland 7.75-8.00
Clips, soft, Cleveland 14.75-15.00
Misc. cast, St. Louis 7.00-7.25

SECONDARY METALS

Brass ingot, 85-5-5-5, less carloads 10.25
standard No. 12 aluminum ... 12.00-12.25

THE HANNA FURNACE CORPORATION
MERCHANT PIG IRON DIVISION OF NATIONAL STEEL CORPORATION
Buffalo Detroit New York Philadelphia Boston

Steel in Eu

Foreign Steel Prices,

London — (*By Radi* steelmaking and pig i tion are reaching recor Great Britain. An addi furnace stack has bee Demand for foundry i limited, although impro ly. Buying of hematite restricted to immedia ments, owing to a lower fect after July 1. Stee rolling mills are operatin capacity. Export busine

The Continent repo trade is satisfactory reduced. Export prices structurals are somewh

French pig iron pr April was 603,000 tons, a 000 tons in March; steel in April 627,000 tons aga tons in March. Lower A resulted from shorter Easter holidays. Daily r ues a steady rise since

Iron Ore

Iron Ore Prices, Pag

Cleveland—Consumptio Superior iron ore dur totaled 2,799,769 gross from the 3,316,691 tons in March. However, April tion represented a gain cent over the 1,853,658 to the comparable month las

Stocks at furnaces and docks May 1 were about tons smaller than a year ures of the Lake Superio association follow:

	Furnaces	Lake Erie docks
May 1, 1939..	18,305,966	4,484,96
Month ago ..	21,054,249	4,817,87
Year ago....	28,280,824	5,395,50

Of the 303 American Gr ore vessels, 170 were in co May 25, according to a stu M. A. Hanna Co., Cleveia represents 57.3 per cent of tonnage of these boats. T commission June 6, 1938 38.7 per cent, consisting o of a total of 303 boats.

Nonferrous Metals

New York—Sentiment markets improved marke week due to the general vance abroad, a lessening pean political tension, and u Wall street security values.

Copper—Refiners advanc for copper and brass scra on Friday as export copper

nd resale to 10.00c. The market held at 10.00c, t, on sales averaging tons per day.

usiness was spotty with rs booking a fair volume on one or two days. Con- not expected to show in- erest until July books are rices held at 4.60c, East

ndertone of the market e to the rise in London ve the £14 level. The mar- quiet outwardly but fair as likely done on the ris- n market. Prime western 0c, East St. Louis.

erings of metal for June ightened and prices ad- the basis of 49.00c for t. Buyers were cautious end of the week in view sing of the London mar- irst call Friday to first call for Whitsuntide holiday sing of the domestic mar- ay for Memorial day.

y — American spot ad- 12.00c, New York, follow- imilar advance abroad. pot held nominally un- t 14.00c, duty paid New

pment

rk—Encouraging domestic machine tools will hold ne well up to April. Such omes from private indus- ldition to a steady flow o armament. Private buy- scattered and while there no large individual pur- ders for one or two tools e are well maintained. high production tools, replacement, and requir- ering work, leads. New lathes and planers are well, deliveries on the anging from 14 to 24 th some builders, while pments are even further Numerous shops have backlogs and some are overtime.

— Machinery sales are e interests indicating a rease in bookings recent- gh so far this month busi- ractically on a par with present, hesitancy in buy- orted prevalent, with ac- nd rather spotty. No en- nt is seen for the imme- ure, as inquiries have wn and summer dullness

-Dealers report active de- spray equipment, flood tion pumps. Private plants are making only necessary replacements. Seasonal requirements for cannery and fishing industries have been placed. Washington state has awarded orders for $10,000 of retorts, tanks, cooking utensils for four state canneries. Low bidder at $38,477 for a highway lighting system, Multnomah county, Oreg., is Berkemeier & Saramel, Portland, Oreg. Bonneville authority has issued a call for bids May 31 for copper cable, June 1 for survey instruments and miscellaneous items, and June 9 for 7400 feet of chain link fence, gates, etc.

Construction and Enterprise

Ohio

BRYAN, O.—Village, C. F. Hester, clerk, will probably take bids in near future on a new 3000-horsepower diesel engine costing with accessories an estimated $150,000, for installation in its power plant. Board of public affairs has charge.

BUCYRUS, O.—Swan Rubber Co. has plans in progress for two new factory units estimated to cost with equipment more than $50,000.

CLEVELAND—City, division of light and power, George Oxer, commissioner, will probably soon advertise for bids, due about June 15, on general contract for constructing an addition to its generating plant, costing $1,000,000. Consulting engineer, Peter Loftus, Pittsburgh.

DOYLESTOWN, O.—Village, B. E. Seaver, mayor, has approved issue of $23,000 mortgage bonds to finance construction of a sewage treatment works. WPA funds allotted.

HAMILTON, O.—Butler county commissioners, P. G. Banker, clerk, is taking bids due at 10 a. m., June 2, on two centrifugal booster pumping units, complete with hydropneumatic storage tank, control equipment, air compressor, sump ejector, pipe, valves and fittings. Fred Hammerle, county engineer.

TOLEDO, O.—Toledo Scale Co. has awarded contract for a new plant to A. Bentley & Son, 201 Belmont avenue, Toledo. Work is now under way.

New York

BEACON, N. Y.—Texas Co., New York, plans to build a new research building at its laboratories here. Will cost over $40,000. D. W. Carswell, engineer, care of owner.

CORTLAND, N. Y.—City takes bids to June 1 on a sewage pumping station and treatment plant costing $230,000. G. D. Holmes, Syracuse, N. Y., consulting engineer.

Michigan

PONTIAC, MICH.—State, Grover Dillman, Lansing, Mich., budget director, is taking bids due at 2 p.m., June 2, on two steam turbine generators, power piping, electrical work, and water treating equipment in connection with additions to power plant at state hospital. Derrick & Gamber Inc., Detroit, consultant.

Illinois

CHICAGO HEIGHTS, ILL. — American Manganese Steel Co. asks bids on a foundry to cost $50,000. B. F. Olson, Chicago, architect.

EAST MOLINE, ILL.—Deere & Co., Moline, Ill., farm equipment builders, soon will take bids for constructing two forge shops, 80 x 260 feet and 100 x 120 feet.

GRANITE CITY, ILL.—Union Starch &

DO YOUR CUSTOMERS BUY FROM HAND-TO-MOUTH THESE DAYS?

Are you forced to build one or two machines, and deliver them in a hurry?

You can save time and money by having the machinery parts or bases welded by Searles Electric Welding Works. Parts and bases can be fabricated up to two tons. You will save on patterns, make a lighter yet stronger machine.

Write today for bids or engineering data!

SEARLES ELECTRIC WELDING WORKS

Welding Engineers

1858 Fulton Street **Chicago, Illinois**

Refining Co. soon will accept bids on a new machine shop, boiler system, engine and generator, costing total of $75,000.

MOLINE, ILL.—Deere & Co. soon receive bids on a five-story, 94 x 150-foot building at its plow works. To house machine shop, tool room, service and maintenance departments.

SIDNEY, ILL.—City has approved $24,000 bond issue and will proceed with plans for a waterworks system costing approximately $53,000.

STREATOR, ILL.—City has completed plans for a sewage disposal plant at cost of about $439,000. C. DeLeuw & Co., Chicago, consultants.

Indiana

CLOVERDALE, IND.—City, R. M. Hunter, clerk, proposes to build a sewage treatment plant and sewerage system at cost of $65,000. C. Hurd, Indianapolis, engineer.

RENSSELAER, IND.—City, board of public works, J. Merritt, clerk, asks bids until June 5 on a new power plant costing $70,000. Will require three sump pumps, eight centrifugal pumps and miscellaneous electrical equipment. J. W. Moore & Son, Indianapolis, consulting engineers.

Delaware

GREENWOOD, DEL.—Delaware Rural Electric association, A. G. Ingram, director, has been allotted $159,000 loan by REA and proposes to build 169 miles of rural power lines.

Maryland

BALTIMORE—City, board of awards, receives bids May 31 for constructing electric substation and other work at Back River sewage treatment plant. Involves conduit, high-tension transformers, switches and cables. George Finck, city sewerage engineer.

District of Columbia

WASHINGTON — Navy department, yards and docks, takes bids to June 14 for a jib crane to be installed at Mare Island, Calif., navy yard. Specification 8975.

WASHINGTON—Navy department, bureau of supplies and accounts, takes bids until 10 a.m., June 2, on a bench-type motor-driven lathe (schedule 6325); a motor-driven turret machine (schedule 6341); a heavy-duty engine lathe (schedule 6342); and motor-driven turret lathes (schedule 6352); until June 6, two single-drum winches with spare parts (schedule 6337); June 9, motor generator set and controller (schedule 6349); and multi-spindle, vertical, drilling and tapping machine (schedule 6408); June 13, motor-driven miller bench (schedule 6391).

Kentucky

MIDDLESBORO, KY.—City receives bids June 1 for contract 1-B, sewage collecting system costing $225,000; and contract 2, sewage treatment plant costing $125,000. J. S. Watkins, Lexington, Ky., consulting engineer.

NORTH MIDDLETOWN, KY.—City will receive bids in June on a waterworks and distribution system costing $50,000. H. de B. Forbes, Richmond, Ky., consulting engineer.

Georgia

TIFTON, GA.—City has rejected preliminary bids on a sewage disposal plant and will call for new bids. Wiedeman & Singleton, Atlanta, Ga., consultants. (Noted April 24.)

Mississippi

VAIDEN, MISS.—Town, D. D. Fullilove Jr., clerk, receives bids June 6 for constructing iron removal and water softening plant at its waterworks.

Louisiana

PLAQUEMINE, LA.—City, Irwin Wilbert, mayor, receives bids June 5 for two sewage and trash pumps and equipment. L. J. Voorhies, Baton Rouge, La., consulting engineer.

Missouri

ANNAPOLIS, MO.—Black River Electric co-operative, Ray Brown, project superintendent, is taking bids to 10:30 a. m., June 1, on approximately 145 miles of rural power lines. E. T. Archer & Co., Kansas City, Mo., consulting engineers. (Noted May 22.)

SEDALIA, MO.—Central Missouri Electric co-operative, W. F. Schiberl, manager, is taking preliminary survey in project for 212 miles of rural electric power transmission lines costing about $225,000.

Oklahoma

ENID, OKLA.—Champlain Refining Co. has plans for a new cracking plant costing $100,000 at its refinery here.

Wisconsin

CORNELL, WIS. — Chippewa Valley Electric co-operative, R. L. Cleaves, superintendent, has been allotted $151,000 additional REA funds for 170 miles rural electric power transmitting lines. Banister Engineering Co., St. Paul, consulting engineer.

MENOMINEE, WIS. — Dunn County Electric co-operative has $241,000 REA allotment and plans to construct approximately 248 miles of rural electric lines in six counties.

WAUSAU, WIS.—City will open bids June 2 for a sewage disposal plant, garbage plant and pressure gas holder plant, to cost in all about $1,340,000. Jerry Donohue Engineering Co., Sheboygan, Wis., consulting engineer.

Minnesota

NEW ULM, MINN.—City, A. C. Sannwald, clerk, will accept bids about June 1 for an office building, laboratory, pumping room, grit and screen chambers, settling tanks and trickling filters at its sewage disposal plant. Ralph D. Thomas, Minneapolis, engineer.

STEPHEN, MINN.—Village, J. F. Yetter, clerk, has approved a $25,000 bond issue and is proceeding with its plans for a sewage disposal plant and water treatment plant costing in all $100,000. P. C. Bettenburg Inc., St. Paul, consulting engineer. (Noted Feb. 20.)

WINDOM, MINN.—City, Martin Peterson, clerk, is taking bids to 7:30 p. m., June 5, on a water filtration plant. Certified check 5 per cent to accompany bid.

Texas

ARLINGTON, TEX.—R. C. Can Co. is drawing up plans for a can manufacturing plant estimated to cost about $50,000 with equipment.

TEMPLE, TEX.—City, Martin Sullivan, mayor, votes June 2 on bond issue of $850,000 to finance proposed municipal power plant and whiteway.

Kansas

ST. JOHN, KANS.—N... Electric co-operative, ... president, has received ... allotment and will cons... rural electric power lin... counties. A. W. Heflin ... Kans., consulting engine...

Nebraska

COLUMBUS, NEBR.—L... lic Power district, Harol... retary, is receiving bids ... June 1, on a power stati... gineering Co., Chicago, eng...

Iowa

BANCROFT, IOWA — ... Droessler, mayor, is tak... bids to 10 a. m., June 20, o... involving two diesel eng... units, complete distributi... various auxiliary equipm... check 5 per cent to accomp... Harrington, Omaha, Neb... engineer.

BREDA, IOWA—Village, ... kamp, clerk, is considerin... construct a sewage disposa... not yet drawn up.

CEDAR FALLS, IOWA ... Hoist & Mfg. Co., John ... president, builder of hois... equipment, has awarded ... W. W. Coombs, Cedar F... one-story additions to it... x 50 feet, and 16 x 50 fee...

MUSCATINE, IOWA—Cit... light trustees, R. E. Reuli... takes bids until 7:30 p. m. ... a 300,000-gallon water re... mated to cost $37,177.

Colorado

BRIGHTON, COLO.—Unio... tric association has receiv... REA allotment for constru... miles of rural transmission ... counties.

DELTA, COLO.—REA ha... $179,000 loan to the Delta-... ral Power Lines association ... 160 miles rural electric ... counties.

FT. MORGAN, COLO.—R... ted $325,000 to the Morgan ... Electric co-operative to fina... of rural electric power l... counties.

Pacific Coast

LOS ANGELES—Hollister ... Co. is making plans to co... x 122-foot addition to its f... Equipment will be needed.

SEATTLE—Bethlehem St... had plans prepared for a p... dition to its roll shop bu... Will install equipment.

Canada

VANCOUVER, B. C.—Cana... Air Co., J. W. Gold, manag... construct a factory for ma... oxygen. Cost estimated at ...

GARSON, ONT.—Internati... Co., Copper Cliff, Ont., D. M... eral manager, is building ... $2,500,000 a new heating pl... plant, steel head frame, mi... equipment, shops and steel s...

MONTREAL, QUE.—Alum... Canada Ltd. has awarded ... Anglin-Norcross Ltd., 892 ... street, Montreal, for a plant ... than $1,000,000.

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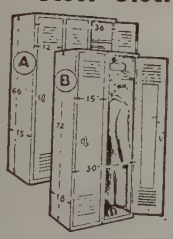

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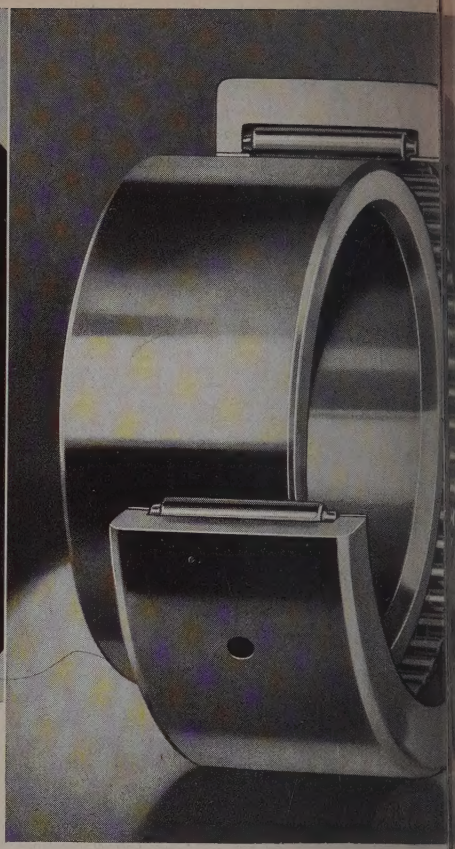

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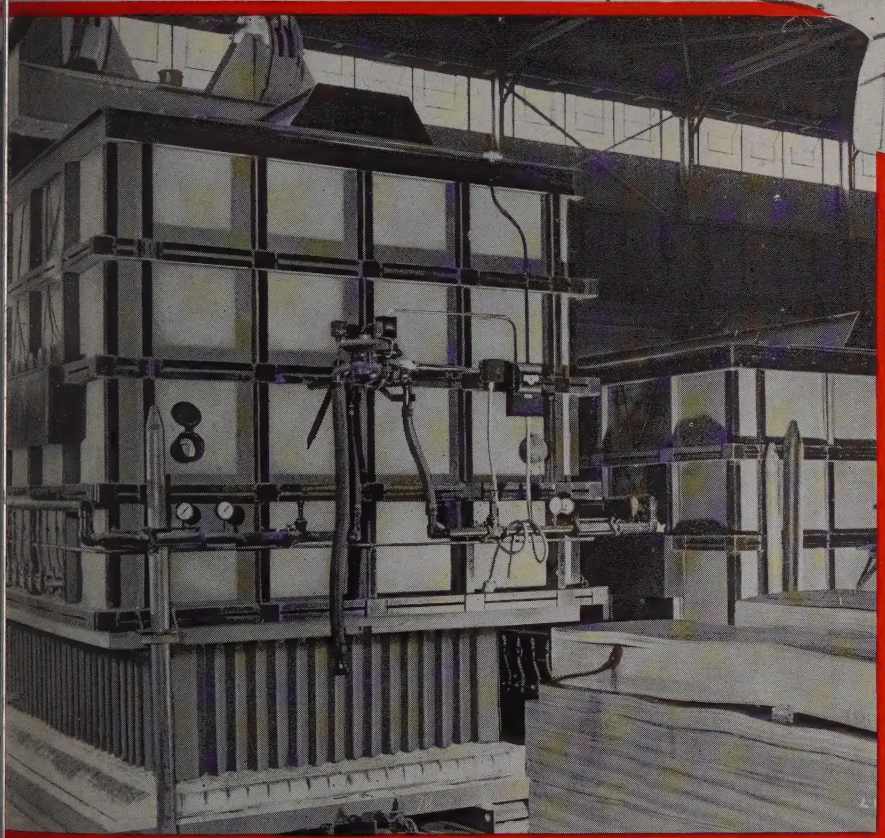

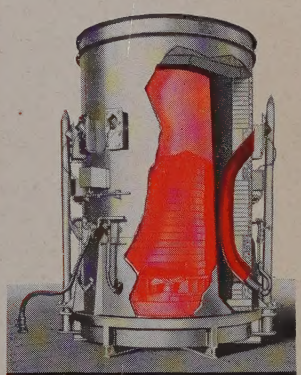

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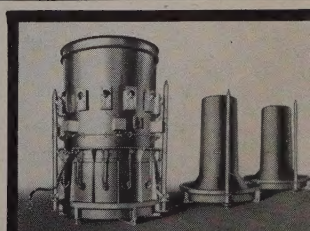

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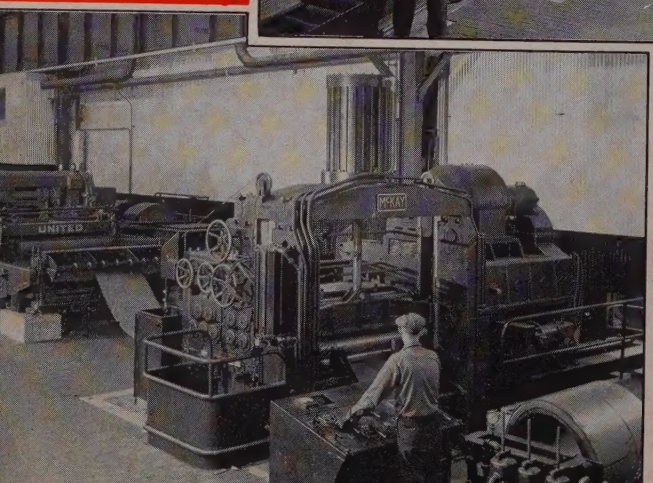

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